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Items of Interest

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Fractures of the Jaw.

By DON M. GRAHAM, M.D., D.D.S., Detroit, Mich.

There is surely no department of the healing art in which an early and accurate diagnosis is so essential as in fractures of the jaw. Early, that unnecessary pain, inflammatory infiltration, and suppuration may be prevented; accurate, that intelligent and effective means may be employed that nature may have the opportunity to successfully repair the damage.

Diagnosis and Classification.

To those acquainted with the anatomy and occlusion of the articulated jaw, little difficulty will be experienced in making a diagnosis of fracture, since the slightest displacement is very evident in the masticating apparatus. Where there is no apparent displacement, the usual diagnostic methods for fracture are applicable. Since the advent of radiography, however, there is no good and sufficient reason for entertaining any doubts as to the probability of fracture, since a good radiograph will show not only the character and the extent of the lesion, but will also suggest the best line of treatment. A number of radiographs may be necessary, however, to give us the fullest information in these cases.

We have in these bones all the varieties of fractures found in the other large bones of the skeleton (simple, multiple, etc.), and for this reason it will be unprofitable for us to enter into a discussion of their



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classification, except to say that it is very rare indeed to find a fracture of the mandible or the maxilla which is not compound. The reason for this is evident. The tooth sockets afford the line of least resistance, and fractures almost invariably involve the alveolus. Besides, the overlying structures of these bones are so thin that it is next to impossible to have a break in the continuity of their structure without the soft tissues being involved. Even in green-stick fractures of children, it is the experience of the writer that these are no exceptions to the general rule.

Method of Fixation, That there is no universally satisfactory method of fixation of these fractures is apparent from the many methods and devices which have been suggested from time to time. It is not the intention of

the writer to enter into a description of these various methods, except in so far as they are applicable to certain classes of fractures. Until recent years the simplest, and perhaps the most universal, method of fixation was the fronto-occipito-mental bandage, utilizing the sound jaw, and thereby making a splint by binding the articulating dental surfaces together, sometimes by means of a head and chin cap. With the advent of the vulcanite and metal plate, the dental and interdental splints came into use, and it was hoped by this method that the parts could be securely fixed, so that nature could successfully repair the damage. This method, however, had the disadvantage of being unsightly, unsanitary, and unreliable, to such an extent that it is now almost a memory, although it can occasionally be employed to good advantage in selected cases. For instance, in the edentulous jaw, which fortunately is rarely fractured, this method of fixation can generally be profitably employed.

When aseptic surgery made its appearance still another method suggested itself, that of wiring the fragments together. This method of wiring is not all that its advocates have claimed for it. That in some cases it is altogether the best method is not denied, but to make it the universal procedure would seem to the writer irrational in the extreme, as other methods of fixation appear vastly simpler and far superior to this method of wiring. In drilling the mandible, for instance, it not infrequently happens that a tooth apex, and incidentally its pulp, is injured, with the result that one or more useful dental members may be lost in the operation. It is not sufficient to say that the surgeon should know his anatomy and should avoid such mistakes. Indeed, it is pretty safe to say that the average surgeon will feel mightily pleased at the prospect of getting the holes drilled, and his wires inserted, ready for his pliers to tighten, consoling himself with the thought that an injured tooth can later be supplied by mechanical means, if necessary. As many of these fractures are oblique,

it is usually the case, when the fragments are approximated by the binding wire, that they over-ride, and perfect articulation is lost. One, or even two loops in a good many fractures, is not sufficient to insure perfect immobility. In surgical fracture of the lower jaw, where every opportunity is afforded for intramandibular wiring, most surgeons will supplement by means of any interdental fixation. The necessary cutting, the questionable presence of the wire, and the time spent in the hospital seems unnecessary; for the majority of these fractures, after reduction and fixation by a more simple and effective method, will permit of a patient's almost immediate return to work.



Fig. 1.

Fig. 1. Angle fracture bands ready for wiring.

Fracture Band Anchorage.

There remains two methods which are now generally used, and which are worthy of somewhat extended consideration. We shall first consider the Angle fracture band and retraction appliance, which can be made to do good service in almost any case of fracture of the jaw. The most serious objection to this method would appear to be that it requires an operator of some familiarity with this kind of apparatus to insure its accurate adjustment and safe retention. These bands are so made that they can be cemented and tightened with screws, so that the possibility of their removal under strain is very small.

The retraction appliance can be made to do good service by placing bands on sound teeth, on either side of the break in the injured jaw, when the retraction screw is turned gently but firmly, bringing the fractured ends together. By this method we can frequently bind the fragments so securely that no motion is present, permitting the patient freedom of mastication, which necessarily should be restricted to soft foods.

With a simple fracture of the mandible, for instance, four fracture bands would be used in the other form of adjustment. On the lower jaw, a band is placed on a sound tooth on either side of the fracture, with bands on corresponding upper teeth; these are securely fastened by figure-

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of-eight wire, firmly and effectively splinting the lower jaw into natural articulation with the upper. Since the distal fragment will take the position of occlusion naturally, it is often unnecessary to mechanically fix it. The position and number of these fracture bands will depend on the conditions present. Figure 1 shows bands in position.

Wire Anchorage Fixation. The wire anchorage, and immobilization of the mandible, is the method most frequently employed by the writer. The approximation of the fractured ends by wiring the teeth of the injured jaw, and even binding the fractured jaw to the sound opposing one, has, no doubt, been employed from time immemorial. That this practice

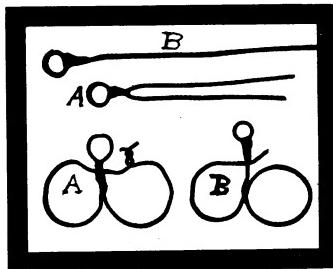


Fig. 2.

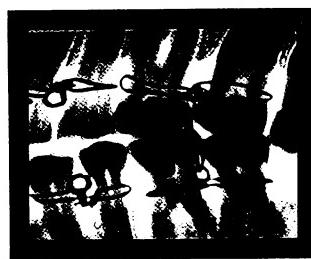


Fig. 2 (C).

Fig. 2. A and B. System of wire anchorage. C. Wire anchorage in position.

has been frequently disappointing is evident, as is also the reason. The difficulty of binding these wires securely and firmly to the teeth, and the inevitable tendency of metals to stretch, is undoubtedly the reason for failures in the majority of cases. Recently, however, this practice has been revived, and to dentistry undoubtedly belongs the credit of developing a technic of wire manipulation, which, for binding and regulating purposes, is reliable in the extreme.

Wires can be so manipulated and adjusted for anchorages about teeth, with such certainty and absolute assurances that these will remain where placed, that there is now no real objection to their employment as anchorages for this work, and, to a very great extent, we believe they are displacing the fracture bands. There is, perhaps, no approved and orthodox method of wiring, and the technic about to be described can be modified to suit the convenience of the operator and the exigencies of the case. Figure 2 illustrates the method of making a wire anchorage. The manipulation of wire A is the suggestion of Dr. Robert T. Oliver, U. S. A., and is found to be more convenient in most cases than style B. C shows wire anchorages in position.



Fig. 3.

Fig. 3. Fracture of mandible resulting from blow from moving crane. Radiograph taken eight weeks after accident.

Selecting two sound teeth anterior to the fracture, a wire, with loop at end, is passed in figure-of-eight fashion through approximal spaces, binding securely these teeth, at the same time leaving the loop in the approximal space in a convenient place for the approximation wire from opposing jaw. In the opposing jaw, the corresponding upper teeth are similarly ligated. The loops are in such a position that a binding wire can be conveniently and firmly bent, bringing the teeth of the fractured jaw against the articulating surfaces of the sound upper ones. On the opposite side of the mouth similar anchorages can be inserted, and in like manner approximation wires placed through loops, and with pliers turned

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to position. Posterior to the fracture it may be necessary to similarly bind opposing teeth, but, as a rule, if the anterior teeth are brought accurately and securely into articulation with their opposing fellows, there will not be the necessity for a posterior anchorage, as the temporal and pterygoid muscles will generally keep posterior fragment in favorable position for repair. If the fracture be in the median line, cuspid or bicuspid anchorages are demanded. Lateral motion can be further prevented, if necessary, by binding upper and lower anchorages in letter X fashion.

There are many advantages in the independent wire-anchorage at-

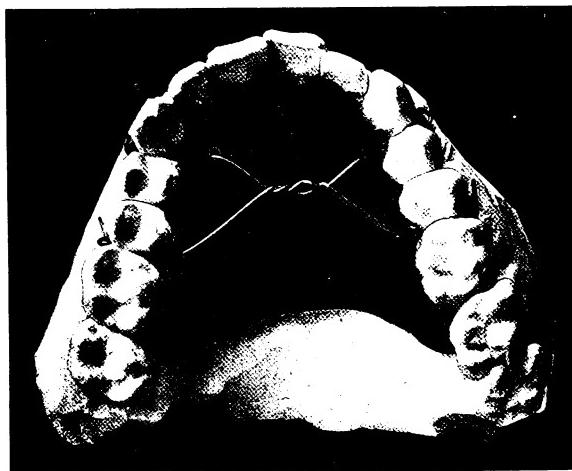


Fig. 4.

Fig. 4. Model of fractured maxilla, with expansion plate and retractive wires in place.

tachment. The binding wire, which will range from 22 to 26-gauge, according to the case and the material used, can be inserted in approximal spaces without much difficulty. The approximation strand can be cut and the jaws released, if at any time there appears the necessity, and in a very few minutes they can again be brought into natural occlusion. Sometimes a general anesthetic is demanded to reduce multiple fractures of much displacement and damage, and in these cases ether is to be recommended. For shorter anesthetic periods, there is nothing superior to nitrous oxide and oxygen, while a large percentage of cases can be reduced and immobilized without any anesthetic.

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Copper or its alloy is the best material for these wire anchorages, and a 22-gauge annealed copper wire will be found sufficiently strong for most cases. A German copper-alloy wire of 24 to 26-gauge is on the market, and is most frequently used by the writer, since it is very strong, and will admit of fine and forcible manipulations in binding and twisting.

The propriety of keeping the jaws in occlusion for three weeks, or thereabouts, has been questioned by some, and it has been stated that the patient suffers physically and mentally from such a procedure. That in actual prac-

Nourishment.

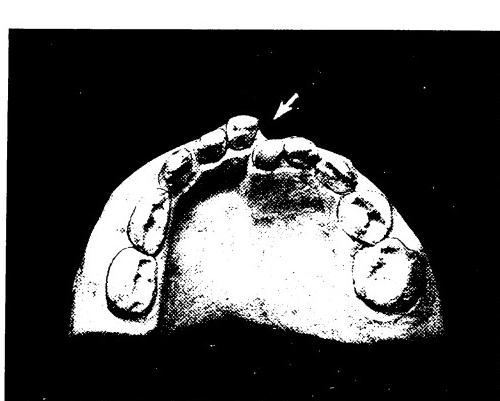


Fig. 5.

Fig. 5. Model of green stick fracture of mandible of child four years old.

tice this is not so, is abundantly proven by the hundreds of cases which have been successfully treated by this method, which allows the patient to return to work to comfortably engage in his vocation within a few hours after reduction and fixation. For the average patient, elaborate explanations and justification will not be necessary. His relief from pain, and almost immediate subsidence of inflammation, is so evident and pleasing that early objections are almost invariably forgotten. The comparative comfort during the healing process, and the excellent results obtained, will, in themselves, be ample justification for this method of fixation.

The concern of the patient and his friends as to his ability to secure nourishment will soon vanish when they learn that he can take, with comparative ease, all kinds of liquid foods, as well as finely shredded solid ones. Even in a perfectly articulating jaw, there are always spaces through which foods can be taken. The approximal spaces, the post dental spaces, and other spaces of irregularity will admit of all this, and it is the exception.

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tion where we can not find sufficient space to admit a small tube. Liquids, such as water, milk, etc., can be taken better without a tube.

Case Illustrations. Occasionally we encounter a lawless, irresponsible individual, usually a foreigner, who objects to this interference with his liberty. Figure 3 shows the results of such obstinacy. This is a radiographic

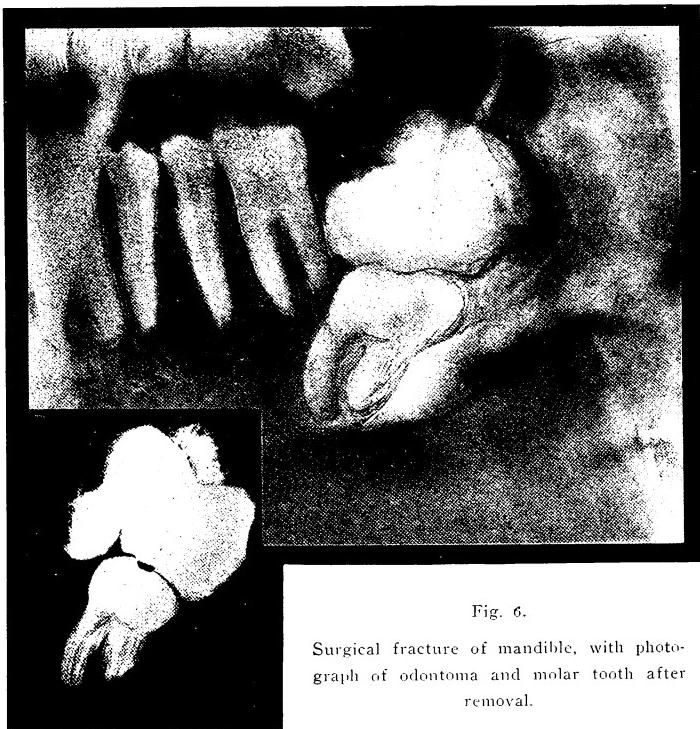


Fig. 6.

Surgical fracture of mandible, with photograph of odontoma and molar tooth after removal.

reproduction of the fractured jaw of an Italian workman, taken eight weeks after he received a severe blow on the mandible, fracturing it as seen in the cut. Four weeks after the accident he presented himself, when jaws were almost completely ankylosed, and pus flowing freely from socket of third molar, which was lost in the accident. At that time the nature of his difficulty was not altogether apparent, but his employers had made every arrangement for his care in a hospital, at the very name of which he trembled with fear. At the end of another four weeks, when the radiograph was taken, arrangements were being made with the hospital steward by telephone, when the patient suddenly disappeared, and "has not been seen nor heard of since."

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The objections of the patient, whose case is represented in Figure 4, were not so pronounced, but his intelligence was not such as would suggest co-operation.

Case II. In this case the molar process of the left maxilla, including bicuspids, and involving the maxillary sinus, was so fractured that on closing his jaw the buccal surfaces of these upper teeth came in contact with the lingual surfaces of the corresponding lower ones. With fracture reduced and impression taken, a vulcanite plate was made, inserted and retained by wires, as shown in Figure 4. That the fractured part might



Fig. 7.



Fig. 8.

Figs. 7 and 8 show result of distressing elevator accident. Fig. 7, part of maxilla that was saved. Fig. 8, part of maxilla that was unavoidably lost.

not suffer from articulation, a post was cemented in the right lower second molar, which had already an occlusal carious cavity. Although this plate made the mouth unspeakably filthy, its use was thought justifiable, and happily the case proceeded to an uneventful recovery.

Case III. Figure 5 is from a model of the lower jaw of a four-year-old child, who fell a distance of several feet, striking on the mental eminence and fracturing

the mandible, with the result that we had a green-stick fracture with much displacement, as shown in cut. Under nitrous-oxide anesthesia, the fracture was reduced, and fortunately, without any attachments, remained so, and proceeded to perfect recovery, even to the extent of saving all the deciduous teeth.

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Fig. 9.

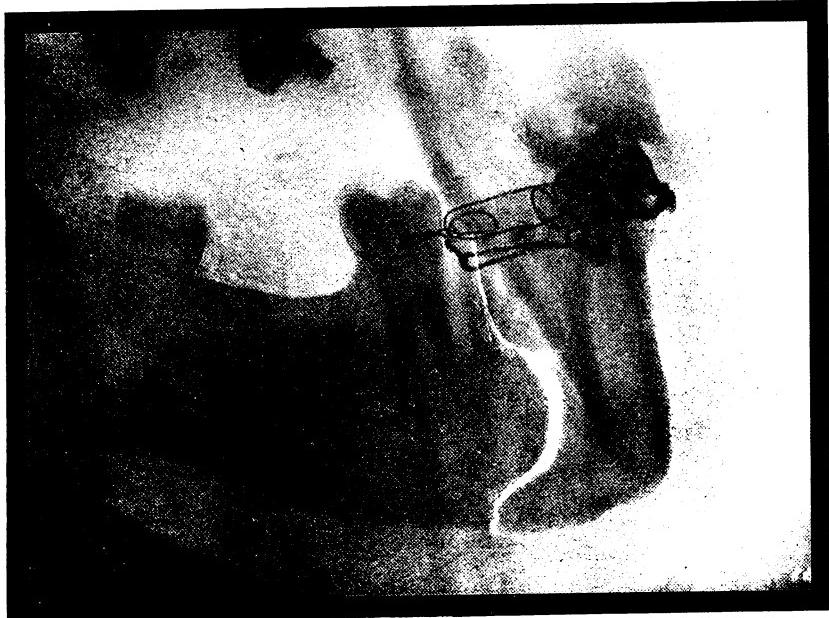


Fig. 10.

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Case IV. Figure 6 is illustrative of surgical fracture of the mandible. The removal of the odontoma and the displaced second molar, as is shown in the illustration, naturally resulted in fracture of the mandible, which was bound to the upper jaw by wire anchorages, and there retained for fifteen days, after which she was allowed to use it cautiously. This patient made a complete recovery from ankylosis, and depraved general health.

Case V. Figures 7 and 8 are radiographs showing the result of a distressing elevator accident, which resulted in the fracture of the frontal, nasal, palatal, and maxillary bones of a lad of thirteen. The maxillary bones were torn



Fig. 11.

away from their articulations, and when seen by the writer they were lying loosely in the oral cavity, one of which was almost entirely stripped of periosteum and almost devoid of nutrition. However, both were returned to their natural articulations, and with the teeth of the lower jaw firmly articulating against the opposing upper ones, a fronto-mento-occipital bandage held them in place by the aid of wire anchorages. In a few days, however, the right one was completely exfoliated, while the left one gradually became united.

**Cases VI
and VII.** Figures 9 and 10 are illustrative of a very common class of mandibular fractures. The first was the result of a football accident. The second was the result of a baseball accident, and besides the fracture in the body of the bone, we had also a fracture of the process involving the four anterior teeth, which required the greatest care that they might be retained. In both cases wire anchorages and fixation of the lower jaw was the method of treatment, which proved most satisfactory.



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Case IX. Figure 11 shows a fractured jaw in position of fixation. This accident resulted from an automobile collision, and the loosened lower incisors necessitated wiring to the extent that we have in the illustration what appears to be a network of wires.

Figures 12 and 13 show the necessity for the utmost vigilance if we are to save teeth in many of these fractures. At the first evidence of the pathologic the gangrenous pulps were removed, canals sterilized and later filled. Figure 14 shows interdental splint.



Fig. 12.



Fig. 13.

Figs. 12 and 13 show teeth contiguous to fracture. In each case (Figs. 10 and 11) the teeth became infected and canal treatments were necessary to save the teeth and hasten repair of fracture.

Oral Sepsis. Oral sepsis is to be combatted by every possible means. As the patient should return at frequent intervals for inspection and adjustment of apparatus, these visits should be utilized in making the oral cavity as sanitary as possible. It should also be remembered that wires have a tendency to stretch, hence the necessity of tightening these every few days. On these occasions mild antiseptic solutions, used in conjunction with compressed air, can be employed to good advantage in dislodging accumulations about the teeth. Instrumentation wherever possible, and when necessary, should also be employed. A half hour can be profitably spent in instructing the patient to properly rinse the mouth, and by faithful and intelligent effort on his part much unnecessary sepsis will be prevented. Eternal vigilance

in anticipating pulp devitalization and decomposition, in teeth contiguous to the fracture, is demanded. By intelligent effort in this direction many post-operative infections can be prevented, and many useful dental members can be conserved. The necessity for mechanical substitution will be exceedingly infrequent if the dental surgeon shows the same zeal and ingenuity as is observed in other departments of dentistry. After the removal of the anchorages for a few days, the patient will experience difficulty in opening and closing the mouth, but this little annoyance will soon be forgotten in the satisfaction that his teeth are in natural alignment and occlusion.



Fig. 14.

Recapitulation. Early diagnosis and fixation is very important to the successful outcome of fractures of the jaw.

There appears to be no universally satisfactory method of fixation, but the method of binding the jaws together seems to promise the best results in the majority of cases.

The interdental splint is not all that its advocates have claimed for it, being unspeakably unsanitary and often extremely unreliable.

The wiring of fractured ends together would seem to be unnecessarily harsh, and suitable only to special cases.

The comparative comfort, and the excellent results obtained, are sufficient justification for immobilizing the jaw.

The difficulty of obtaining nourishment after this procedure is overestimated, and the average patient can go about his usual duties with comparative comfort, with no apparent physical deterioration during the healing process.

The care of the teeth, especially those contiguous to the fracture, is most important, as they are frequently sources of secondary infection.

Unique Tooth Fracture.

By S. H. ROFF, D.D.S., Cincinnati, Ohio

The accompanying photograph (Fig. 1) shows a lower left second molar split in two. The writer believes this case to be unique.

He was fortunate in that he was able to observe this tooth at frequent intervals, from August 31, 1904, to the date of its extraction, Sept. 27, 1911.

The history of the case is as follows: Mr. M., about 50 years of age, with exceptionally strong and healthy teeth, free of caries, and with scarcely any fillings, consulted the writer on Aug. 31, 1904.

At that time he called attention to the corresponding tooth on the right side of his mouth, which was held together with a band. A dentist had split it, he explained, in attempting to drill into it. He attributed this misfortune to the carelessness of the operator. This tooth was also free from caries, and he explained the attempt to drill into it by saying



Fig. 1.

that it had bothered him somewhat, and the "Dentist had decided to kill the nerve." On November 27, 1905, he called and had this banded tooth (which had become inflamed and loose) extracted.

Previous to this time he mentioned the opposite tooth (the one here shown), and asked if anything was the matter with it, saying that it felt a little sensitive at times. To all appearances, it was absolutely sound. From that time to the date of its extraction, the patient was seen at intervals of not more than one year, and each time the sensitive tooth was mentioned and pronounced sound. September 27, 1905, the fissure in this tooth, which was very slight and shallow, was filled with an amalgam filling. For a week or ten days previous to the extraction of this tooth,

the patient called almost every day, but the closest examination failed to show anything wrong, and the tissues showed no inflammation till the last visit, when there was considerable inflammation, and the tooth lay split open from distal to mesial almost in the exact center.

The belief of the writer is that this crack commenced seven or eight years ago, gradually extending and irritating the pulp at different points, eventually destroying the pulp. The final disturbance, that of the last ten days, was caused by the accumulation of gas, the pressure of which was partially responsible for the tooth dividing at that particular time. The pulp of the tooth, though dead, was still present when the tooth was extracted, proving to the writer's mind that the encroachment of this crack, though irritating different parts of the pulp, had taken years to cause its death.

Too much stress cannot be laid upon the soundness, the general appearance of health and strength of texture of this split tooth. Every practitioner is more or less familiar with broken and cracked teeth, with roots split, and broken crowns of teeth which are dead and weakened, but this split, which commenced over seven years ago, and worked its way through this tooth as a small crack will in a pane of glass, and finally caused its destruction, is, in the writer's opinion, something new. Possibly it has happened before, but it has not been seen and reported.

National Relief Fund for Indigent Dentists Proposed.

(Draft of letter sent to all State Societies by the Relief Committee of the National Dental Society.)

Your society will doubtless vote to come into the National Dental Association in accordance with the plan of the American Medical Association, as adopted by the National Dental Association at Cleveland last summer. In doing this it will probably be necessary for you to alter your constitution and by-laws. This is an appeal to you to seize the opportunity to provide for another good cause at the same time.

The National Dental Association is endeavoring to establish a fund for the benefit of its aged and disabled members, and at the last annual meeting a committee was appointed to take charge of this work.

To make clear to you the plan upon which we wish to proceed, we quote from the paper presented to the National Dental Association, which was adopted, and in accordance with which its committee was selected.



Plan—Let each State society increase its annual dues one dollar for each member, and let the additional one dollar thus obtained be turned over to a committee to be known as the Relief Committee. This committee should consist of three members, to be elected by ballot, the senior member to serve three years, the junior members to serve one and two years, respectively, so that at each annual meeting there will be one place to fill on this committee. It shall be the duty of this committee to take care of the relief fund, to solicit subscriptions to it whenever and wherever in their judgment they are likely to be obtained, to receive any donations and legacies that may come to their care, and to report to the National Committee any cases of distress among our members that, in their judgment, deserve our attention, turning over annually to the National Committee the money collected during the year.

This plan, if adopted by all the State societies, should, when all are working in unison, produce thirty or forty thousand dollars per annum from the one dollar per member alone, to say nothing of donations, voluntary contributions, etc.

This plan was put before the Tennessee and Kentucky Dental Societies, before it was acted upon in the National Dental Association, and was adopted by them. Several other Southern States, at their annual meetings in 1911, agreed to adopt it, provided it was endorsed by the National Dental Association.

The National Committee is receiving the most encouraging letters from dentists all over the country, who are enthusiastic for the success of this movement.

While making the necessary changes in your constitution, in order to come into the newly organized National Dental Association, we beg you to provide for the increase of your dues, the small sum of one dollar per member for the benefit of the unfortunate.

We cannot believe that you have one member with soul so dead that he would vote against a movement so noble, so manifestly beneficent. Let each one pause and reflect that though now enjoying all the comforts of life, himself, and his family luxuriously provided for, there are brethren not so fortunate, whose loved ones are suffering for the necessities of life. Will you turn a deaf ear to their mute appeal for help? If you do, there may come a time when you will take their place, and there will be none to succor you. Think what a great achievement to have a fund to supply the wants of our unfortunates that is their very own, just as if it were a policy in a life insurance or accident company, relieving them of the humiliation of asking for assistance, or having friends come to their relief: a fund so easily raised that no member of the organization will ever miss the one dollar that he contributes per year.



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Think of doing so much good with so little.

Will you put this movement through in your society, and notify our committee of your readiness to work with us?

L. G. NOEL, *Chairman,*

EDWARD S. GAYLORD,

W. T. CHAMBERS,

Committee for N. D. A.

A Home for the Aged Dentist.

By J. E. STOREY, D.D.S., Beaumont, Texas.

When time has dulled the eye and palsied the hand of a noble being, who has given his life for the relief of his fellows, and left him marooned on the island of poverty, there should be a place set aside for such a man.

In the realm of humanity God has imbued his creatures with a love of fraternalism, and with a love, and a desire to aid those who are no longer able to help themselves.

We see men banded together with the sole purpose of assisting the weak. We see homes established by fraternal orders in which the aged are given places to rest their weary bodies.

But where in all the earth, my brothers, is there a place for the aged dentist? What has he to look forward to, when he has spent his all for the upbuilding of his profession?

When time no longer lends to him a steady hand, and the eye has grown dim, must he be forced to become a vendor of small wares on the street corners? Or will you, my brothers, now take up a noble work, so ardently championed by the best men of your profession, and make for the aged dentist a home, where, in his declining days, he may find rest and peace? thus protecting him from the world, and his cheek not be made to burn with shame by that which he would be forced to do in his effort to keep the wolf from the door, and protect the gray hairs of that helpmeet who has gone down the years by his side.

My God, brothers! Can you not see what a glorious achievement this would be? How little of your substance this would take, provided all would give?

Think of a beautiful home on the outskirts of some centrally located little city, which would be maintained by contributions donated by members of the different dental societies.

You would be but a callous worm if you did not feel your heart swell with pride as you handed over your small mite, which would make for



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the poor, superannuated dentist a garden of ease—a place of enjoyment—“*A Home.*”

Brothers, let us get together and organize a *Fraternal Dental Brotherhood*, and let the password be, “*A Home for the Aged Dentist.*”

Could I but drive this idea home to you, as I see it, and as those who preceded me in this cause see it, our powers of persuasion would hardly be touched. The effort would be but the passing of a word. The home would be an established fact, ere the thought had come, and the aged dentist would no longer face the future with the dread that comes to the aged poor.

Come, brothers, one and all, from city and from hamlet, and let us join in one mighty brotherhood for one purpose, that of building a home for the protection of our aged brothers.

Who of you have not felt the proud swelling of the heart when he has stretched forth his hand and thrown the mantle of protection around one who no longer is given the power to protect himself? So, brothers, let not the year 1912 go by without showing that we are men, with the same feelings, the same promptings as other fraternal bodies.

We must protect our aged brothers. Every man who is willing to assist in this worthy cause will send his name to Doctor L. G. Noel, Nashville, Tenn., stating exactly the amount he feels able to contribute annually.





Discussion of Dr. Young's Paper.

*Read before the American Society of Orthodontists.**

Dr. H. A. Pullen. After listening to this splendid essay on the technic of efficient application of fixed appliances, and noting the completeness of detail, the clearness of description, and the perfect order and arrangement of the several divisions of the subject, I feel that a commendatory and congratulatory word should first be given to the essayist for his valuable contribution to the literature of orthodontia technic before attempting to make any other comment.

This essay, on account of its being the most complete systematic description of the correct methods of using the expansion arch for various tooth movements, from the simplest to the most complex, stands unique in orthodontic literature. It is one of these "missing links," as it were, which are occasionally found in every science, which exactly fit into the place that has apparently been left for some one who had the knowledge and inspiration to produce it.

The value of this article may be comparatively estimated when it can be shown that the various authors on orthodontia technic for the last twenty years have failed to give us such a perfect description of the application of the expansion arch as is given in this essay.

Again, a glance at the archives of orthodontia, as shown by our textbooks, will reveal a certain bareness in spots; not perhaps noticeable to

*Dr. Young's paper was published in the February issue.—ED.



the careless observer, but all too evident to the astute reviewer, and perchance, even to the authors themselves, who, by the subtlety of their art, have cleverly concealed their otherwise palpably evident omission of such important technical descriptions as this essay supplies.

Likewise, the simplest description of primary principles in any science is always the most desirable, from the reader's standpoint, because it is the easiest for his mind to grasp, as compared to a complex, verbose, disunited description of such principles. This essay is written so simply that any one can understand it, and the clearness, conciseness, and completeness of the text is a credit to the essayist and a joy to the reader. As an evidence of its clearness, it may be noted that the paper can be read and understood perfectly without a single illustration.

Relative more particularly to the point of view taken by the writer in this essay, it is most appropriate for him to deal with his subject from the standpoint of efficiency, in view of the many inefficient applications of the appliances for the correction of malocclusion that are daily made by those who do not understand what efficiency means as regards appliances in the mouth.

For example, the various tooth movements described in the essay necessarily require that the relations of force and anchorage be always correctly proportioned, and the expansion arch so adjusted that its force will be just sufficient to do the work required of it, and at all times be under the control of the operator, and the exactness with which the essayist describes the positive control of both force and anchorage is the most important feature of the paper to which I wish especially to call your attention.

Efficiency is the keynote to the various combinations described under the different headings in the essay, and in consequence of the subject being treated from this standpoint, the particular value of the paper, in whole or part, to the student or practitioner is inestimable.

Relative to the positions, the shaping and manipulation of the expansion arches for the various tooth movements described, I add a hearty approval, for in each instance force and anchorage are so proportioned and conserved that successful results in treatment thereby must be assured.

Taking up the technical discussion of the subject relative to these principles, there are certain features spoken of by the essayist which cannot be too strongly impressed.

For example, the principle of fixation of the appliances upon the teeth, so that the patient cannot remove them, is one of the secrets of the success of the modern orthodontist.

The cemented clamp band, or plain band, illustrates most perfectly



the fixation principle in the anchorage; and the expansion arch, firmly supported by the buccal tubes, and by ligatures, represents this same principle in the operating appliance.

Whatever the esthetic requirements may indicate in the way of bands without projecting screws and nuts on the lingual side, the clamp band, perfected by Dr. Angle, will always stand foremost in its power of holding to the tooth, and consequently, will always produce the greatest power of fixation in the anchor tooth.

As regards the fixation of the expansion arch upon the anchor teeth, it will be observed that the inexperienced operator will use an expansion



Fig. 1.

arch which can be bolted to the distal end of the buccal tube rather than take chances with an expansion arch which is free to slip out if the ligature comes off.

It has happened with experienced operators, that, relying too much on the gripping power of the friction sleeve, and the anterior ligatures, occasionally a patient will come in with the expansion arch sealed up in an envelope instead of being secure in its proper place upon the teeth.

It speaks well for the gripping power of the friction sleeve that this accident is only occasional, and it is not my intention to discredit this valuable device in mentioning a further means of holding the arch in place in the buccal tubes than that afforded by the friction sleeve and ligatures. I refer to a short curved spring (Fig. 1) ground upon the end of the expansion arch with the carborundum wheel, this spring being shaped somewhat like a vulcanite scraper, such as you were familiar with in the early days before the electric lathe came into general use.

This "beaver-tail" spring may be made to exert any degree of internal spring upon the inside of the buccal tube, thus ensuring that the expansion arch will not slip out of the tubes if the anterior ligatures come off, and also that the patient cannot remove the arch without using considerable force.

Of quite as much importance as the fixation of the expansion arch is the means whereby the nut on the arch is prevented from unturning during mastication, and in the friction sleeve nut we have an example of reciprocity between two otherwise independent parts of the mechanism.



ITEMS OF INTEREST

The friction sleeve prevents the arch from slipping out of the buccal tube, and the flange of the nut tightening against the friction sleeve prevents the nut from unturning.

Of a somewhat different structure, but answering the same purpose, is the split nut, also shown in Figure 1. This nut is pinched together in the split portion, and then turned on the arch to its proper position, which it will positively keep, except when turned with a wrench.

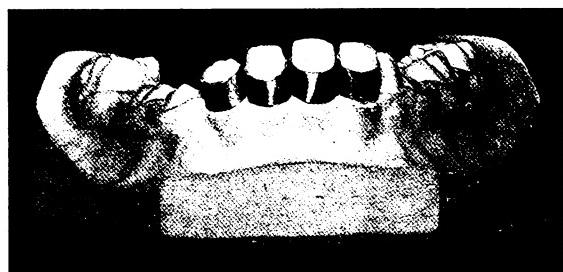


Fig. 2.

These details of structure are seemingly trivial, and yet, if they are not taken into account, the efficiency of the appliance is never up to a proper standard, as those have reason to know, who, in their experience have had the plain nuts on the expansion arch unturn, the ligatures become loose, and the arch slip out of the tubes.

For the purpose of protecting the tooth surfaces most prone to injury from the formation of food retention centers, where the expansion arch touches the teeth, in the region of the lower incisors especially, it is sometimes a good plan to cover these incisors with delicate bands of thin gold and platinum.

As shown in Figure 2, the bands are contoured close to the gum line and soldered on the lingual surface. An alloy of twenty parts pure gold, with about four parts of platinum, is very pliable and easy to fit around these teeth, and is sufficiently strong to answer every purpose.

In reference to the clamp bands, I have a preference for the lapping band, because of its more perfectly protecting the tooth when cemented in position. The surface upon which the lingual screw rests, even if cement is placed between the screw and the tooth, is liable to become more or less of a retention center for food, and the lingual lap covers this otherwise open space and thoroughly protects the tooth surface in this region.

In the movement of molars lingually or buccally on one side only, I have occasionally used the intermaxillary elastic from the lingual side of the upper molar on the normal half to the lingual surface of the lower molar on the half in buccal occlusion, as shown in Figure 3. By this means a greater force is obtained than in the method shown by Dr. Young, where the elastic is stretched from the buccal side of a lower molar to the lingual side of an upper molar, directly antagonizing with it on the same lateral half. Also, the direction of the force is more nearly correct, and the interference with the tongue is trivial.

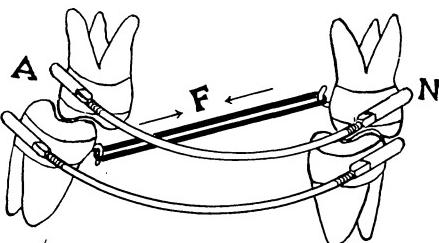


Fig. 3.

I wish to thank Dr. Young for his paper. Just as Dr. Pullen did, I read this paper without the illustrations, and, considering the variety and number of problems discussed, I thought it remarkable that it should be so clear that, with careful reading, it was possible to understand the somewhat complex technic even without his illustrations.

There was, however, just one point throughout the paper which once in a while was not clear, and that brings me to a subject that we might very well as a society clear up at once. I allude to the term "arch." The essayist endeavored to differentiate between the metallic arch and the dental arch by always using the word "expansion" when alluding to the appliance, but it just happened in one place that he left out the word "expansion," and for the moment it was a little confusing.

Even the use of the adjective "expansion" is not quite sufficiently accurate, because the essayist himself in this very paper shows us how we can *contract* arches with this *expansion* arch. If Dr. Lischer will permit me to mention it, I would say that in his forthcoming book he has used the words, "alignment wire." I think that we should abandon this word "arch," and adopt another term for the appliance. Some writers have used the word "bow." During Dr. Pullen's discussion he spoke of the arch slipping; if he had said "the bow slipped" we would have known at once what he meant, but when saying "the arch slipped," it might be



difficult for a beginner to know which he meant. I think it might be well for us to use the word "bow" instead of "arch." If we must always say "metallic arch," that is objectionable, being two words instead of one; and the same is true of Dr. Lischer's suggestion "alignment wire."

I agree with Dr. Young practically in everything that he has said. I believe, also, as Dr. Pullen has said, that the paper fills a long-felt want, and I shall only allude to one or two points.

In one place, in the early part of the paper, the essayist speaks of separating teeth with wire, and then goes on to say that in adult cases the silk ligature may be used. I believe that the silk ligature should be used almost always. I believe that in correcting malocclusion we should cause as little pain as possible. There are two ways of applying force in the mouth: in one we exert the greatest force against the greatest resistance. If we do this we cause the greatest amount of pain. If we twist a wire ligature around the contact point we at once apply the maximum of force that the patient is able to endure at that moment; that is what I mean by exerting the greatest pressure against the greatest resistance; that will cause pain.

If we pass a silk ligature around the contact points and tie it tight, we exert the least force against the greatest resistance. As the ligature begins to contract, it does so gradually, and we have an increasing stress upon a decreasing resistance, and that gives the least pain.

**Painless
Application of
Ligatures.**

Dr. Rogers, in his president's address, told us of the remarkable tenacity with which we adhere to habits. I fear that we often get into certain habits of procedure, and fail to look for better ways of doing what seem to be simple things. We have all experienced the difficulty of passing wires between teeth, especially at the outset of treatment, and our little patients have experienced the pain. The utilization of the silk ligature in place of the wire still left us with troubles on our hands. The end of the silk cannot be passed between the teeth below the contact point, because it lacks the rigidity of the wire, yet it is rigid enough to cause distress if forced down from the incisal edges, towards and past the points of contact. It was not till some time after I had been using the heavy silk ligatures for separating teeth, that it occurred to me that a similar method of introducing all ligatures would save much pain to my little patients. Now, in all cases where the teeth are in close contact, I loop a strand of soft floss silk, pass a looped end of the ligature silk through the loop of the floss, and as the floss is readily and painlessly passed from the incisal edges, down and past the points of contact, the looped end of the ligature silk is then easily drawn through under

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the contact points, producing the minimum of distress for the patient. This requires more time, as it necessitates the looping of each end of the ligature, but it makes a friend of the boy or girl.

I wish to express my approval of, and gratitude for, the band fitting instruments shown by Dr. Young. I find them so useful that I felt like dismissing an assistant who broke the one which Dr. Young first presented to me, until I learned that Dr. Young had a fresh supply. I at once secured two, and keep one in reserve.

The essayist has given us many valuable directions as to how the tubes should be attached to the molar bands in order to produce the greatest efficiency from the very inauguration of the treatment. He pointed out the important influence that will be exerted by these tubes, in accordance with the planes in which they lie, and the relation they may bear one with the other, and both with the occlusal plane of the natural teeth. But he did not explain to us the methods by which he secures this accuracy of adjustment. There is a hint in his paper, from which I deduce that he makes these adjustments working directly in the mouth. I believe, too, that this is the usual mode of procedure. I must confess that I am unable to accomplish my purpose in this way. I always aim to so attach the tubes to the molar bands, that when the bands are cemented to place, and the bow introduced, the bow will lie exactly in the plane desired, standing off from the buccal teeth neither more nor less than it should at the outset of the work, and exerting neither expansive nor contractive force. In other words, the bow, when first introduced, should be in a state of rest, while lying in the plane and position demanded by the plan of treatment. I find that I can accomplish this with greater certainty working to a model.

Technique of Adjusting Bands and Tubes.

Having fitted the molar bands, without tubes, of course, as described by Dr. Young, and the child having worn them for a sufficient time to get accustomed to their presence, I take an impression of, let us say, the upper arch, with the bands on the molars, and while the lingual nuts are screwed up tightly. This is important, because if the bands are loose upon the molars at the time of taking the impression, the tightening up of the nuts when finally cementing the bands in place will deflect the tubes.

After taking the impression, the bands are removed and set in their proper places in the impression. Silk ligatures may then be tied between the teeth, and the patient dismissed until the following day. A preferable plan, however, is to fit a second pair of bands and dismiss the child with these in position. This not only preserves the spaces between the teeth, but these bands may then be put aside and used later in retention.



ITEMS OF INTEREST

The impression is filled with a mixture, one-half sump and one-half plaster, though any of the soldering investment compositions may be used for making the model. When separated, we have a model of the mouth with the molar bands in place. With a sharp knife cut away the buccal half of each molar. This is done to permit the flame of the blow-pipe to reach the band from the lingual aspect, thus avoiding the danger of overheating and burning the tube. (See Fig. 4.) A tube is placed over one



Fig. 4.

end of the bow and held against the buccal side of the molar band, thus determining the exact position which it should occupy. It is then fastened to the molar band with hard wax, and the bow withdrawn.

At this point I must mention a most useful compound, the formula of which was first given to me by Dr. Young, and which is as follows:

Asbestos fibre	1 pound
Coarse pumice	2 pounds
Potter's clay	5 pounds

These are mixed with water and kneaded into a doughy mass, which is kept in a glass preserve jar. If inclined to flake, use less of the clay. The jar being kept tightly stoppered prevents the drying up of the composition, though water may be added at any time. For want of a better name, I shall call this composition "investment putty."

The first tube having been attached to the band with wax, a very small mass of the investment putty is placed over each end of the tube and pressed against the model, to which it will be found to adhere slightly. It is well also to place another mass of the investment putty over the lingual screw and nut, as a precaution against inadvertently melting the nut,

and thus ruining the appliance. A buccal tube thus attached to the band and ready for soldering is shown in Figure 4. Unlike other investments, the blow-pipe flame may be thrown upon this investment putty, which at once hardens into a brick-like mass, without sputtering or displacement. I consider this composition indispensable in the orthodontist's laboratory, and indeed it would be useful in prosthodontic work also.

The tube is readily soldered, and the bow may be again introduced and its direction studied. It is then altered by bending until the opposite

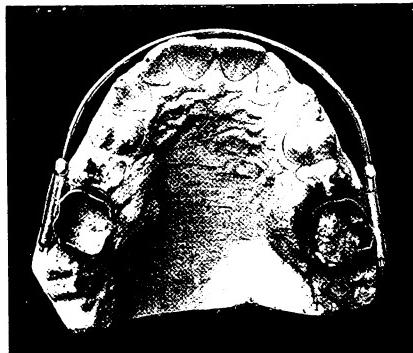


Fig. 5.



Fig. 6.

end with its tube rests "dead" against the molar band of the opposite side, the bow itself occupying exactly the position and relations demanded by the treatment of the case. The second tube is then waxed to place, and the bow should be readily withdrawn without disturbing the second tube, which is only attached with wax; otherwise the bow is not properly set, and probably has some spring. The second tube is soldered, as was the first, and when these molar bands are cemented in the mouth, the bow will enter the tubes and occupy exactly the relations worked out on the model.

It might seem that this is a lengthy process, but except for the time lost through waiting for plaster to set, the technic is exceedingly simple. For example, I have frequently set and soldered two tubes in this manner, while waiting for cement to harden in the mouth of another patient. Nor is it actually necessary to have a day elapse between taking the impression and placing the appliance in the mouth. If the patient can wait an hour, the work can all be done at one sitting. It is my preference, however, to make two sittings of the work, because I can then allow time for the model to set hard.



Adjustment of the Bow.

Dr. Young, in this paper and in previous papers, alludes to bending the bow near the ends in order to avoid the danger of rotating molars during expansion. In very narrow, or V-shaped arches, the bending of the bow in this form often causes the bow to stand off so far from the bicuspids and molars as to cause serious irritation of the cheeks. Whilst we can seldom, if ever, have the buccal tubes actually parallel, we should have them as nearly so as possible, and in doing this we would often find the bow assuming the relation shown in Figure 5. If a bow of sufficiently small gauge is used, so that it is possible to tie the bow tight to the bicuspids at once, too great a force would be exerted against these teeth, and in moving buccally they would be badly tipped. This difficulty may be obviated, and the work greatly facilitated by making a double bend in the bow, as shown in Figure 6. This is a method which I find has been used by others, but as I have never seen it advocated in print, I offer it for the benefit of those who may not have thought of this solution of a somewhat vexing problem.

If the illustration (Figure 6) be studied, it will be seen that the buccal tubes are fairly parallel, while the bow stands away from the bicuspids sufficiently for the inauguration of the treatment. When the teeth have been moved buccally, so that they touch the bow, the bow can be readily altered without removing and resoldering the tubes. To accomplish this, first slightly compress the bend in the bow nearest to its entrance in the tube. Place the bow in the tube, in the mouth, and the bow will stand away from all the teeth. Then compress the second bend, and this will cause the bow to come back into proper relation with the front of the arch, while standing slightly away from the bicuspids. The bends on the opposite side are then altered until that end of the bow will lie against the buccal tube (not in it), and perfectly parallel with it. The bow may then be slipped into both tubes, and the widening of the bicuspid region resumed, there being no expansion force in the molar region.

There is one more point that I would like to speak of. The keynote of this paper is efficiency. I think that the efficiency of the molar clamp bands would be greatly increased if the screw be attached near one edge of the band rather than at the center, as is commonly the case. This, of course, interferes with the universal application of the clamp band, but that is not to be considered. It is merely necessary to have two styles of bands, right and left bands, one might say, as seen in Figure 7, A. With bands made in this manner a "right band" would be applicable to the right side, whether the molar be an upper or a lower. Figure 7, B.

With the band as made at present, the screw attached at the center, we often meet trouble on both the upper molar and the lower. Upper

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molars not infrequently are so tapering from the middle third of the tooth to the occlusal surface that the tightening of the nut on the screw actually drives the band off the tooth, whereas if the screw were attached at one edge of the band, and applied so as to lie close to the gum, the band could readily be tightened. Likewise with the screw in this position, viz., close to the gum margin, it is less likely to irritate the tongue. (Fig. 7.) Conversely the lower molars frequently tip lingually to such an extent

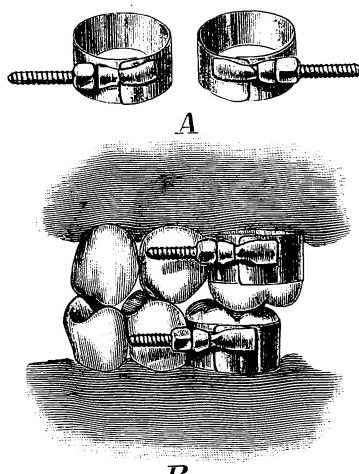


FIG. 7.

that the screw should be attached at the edge of the band nearest to the occlusal surface to avoid irritation of both tongue and soft tissues. Thus a "right band" made in this way solves both problems on the right side, and, of course, "left bands" are equally effective on the left side. (Fig. 7.)

This idea is not original with myself. Indeed, I have heard the theory often expounded by others, but so far I have not heard anyone report practical experience with bands made after this manner. Therefore, I may state that I have had Mr. Aderer make up all my bands during the past year in this style, and from my experience I can say that I firmly believe that the right and left bands here illustrated are far more effective, being more readily adapted in difficult cases, and being much less likely to become loosened or dislodged than the old style band with screw attached at the center of the band.

Inasmuch as Dr. Ottolengui has referred to my
Dr. Fischer. forthcoming work, and the desirability for a more



suitable term for our so-called "expansion arch," I feel I owe you an explanation. I have discarded it for *alignment wire* first, because we use the appliance for *contraction* of the dental arch as well as for *expansion*; second, we should limit the word *arch* to the teeth, viz., the dental arch. And third, if we trace the evolution of this element of an appliance we find that it has passed through many stages. In its earliest forms it was made of wood, or strips of bamboo. Later it was used in the form of a flat ribbon of metal, either plain, perforated, or corrugated. Still later it assumed the form of a D-shaped wire; and finally, that of a round wire, either with plain or threaded ends. And though its uses have been greatly extended in recent years, its primary purpose is for the establishment of arch form, for placing the teeth of the arch to which it is applied into *alignment*. Hence we may very appropriately term it *alignment wire*, especially since it is invariably made of wire.

I regret to note that Dr. Young did not refer to Körbitz's recent work upon the subject of which his paper treats; the more so, since the latter's work was so thorough and so richly illustrated.

Dr. Rogers. I will ask Dr. Young to close the discussion of his paper.

Dr. Young. Really I have nothing more to say; all I can do is to thank the gentlemen for the very kind remarks, and to thank you all for the reception accorded to my paper.



SOCIETY PAPERS



The Scope of Prophylaxis in Dentistry.

By CHARLES C. VOELKER, D.D.S., Brooklyn, N. Y.

Read before the Second District Dental Society, Dec. 1911.

"Into the hands of no other specialty of medicine has there been thrust greater responsibility than into those of dentistry. Its duty by birthright is not only to combat the ravages of dental disease, but that higher achievement—and the final goal of medical science—the prevention of disease, not only within its own field but also in the larger one of general medicine." These words of Dr. Arthur H. Merritt, of New York, most aptly express the true function of dentistry in its relation to preventive medicine and, with his kind permission, your essayist has taken them as the keynote of his paper.

The diversity of opinion which exists regarding the true meaning of prophylaxis, and the narrow interpretation which some 'specialists in prophylaxis'

Meaning of Prophylaxis. have placed upon the term by qualifying it as a purely surgical procedure involving only manipulative skill, have caused confusion, not alone in the minds of dentists, but also amongst the intelligent laity who seek a correct answer to the query, "What is prophylaxis?"

Under the title "Prophylaxis," a writer in one of our dental journals takes exception to the phrase, "Clean teeth will not decay," which is serving as the battle-cry in the present worldwide oral hygiene crusade. This phrase is characterized as being misleading and "obstructive of further progress"; but at the same time this writer admits that it is "true in the ideal sense." And the hope is expressed that a broader definition of prophylaxis may be formulated, and that we may "devise something worthy to be called prophylaxis in the larger meaning of the term."



The first *comprehensive* definition of what pro-

A Few Definitions. phylaxis really means, which your essayist can find in our dental literature of the past twenty-two years, occurs in an article entitled "*Prophylaxis in the Field of the Dental Surgeon*," by Dr. Charles B. Atkinson, of New York, and was published in the *International Dental Journal* for June, 1891, although Dr. James Truman, of Philadelphia, made use of the term in the course of an article on "The Pulp and Treatment of Pulp Canals," as early as 1889.* Dr. D. D. Smith, of Philadelphia, says in a recent article that "The term prophylaxis was not used in dentistry prior to my first article on the subject, published in the *International Dental Journal* for January, 1899" (*Dental Brief*, June, 1911, "*Oral Prophylaxis*"). I cite this in the interests of historical accuracy, especially as I wish to quote further on from Dr. Atkinson's paper, which was written seven years before that of the last-mentioned writer.

In order that we may have a clear understanding of the terms used, and at the risk of being charged with unnecessary prolixity, your essayist has introduced here several definitions, the result of a careful search through some thirty dictionaries and encyclopedias, undertaken with the object of finding, if possible, some basis of authority for the restricted conception of prophylaxis held by many writers in our dental literature.

Medicine. Medicine is defined by Webster as "The science and art dealing with the prevention, cure, and alleviation of disease." That branch of medicine which treats of mechanical or operative measures for healing diseases, deformities, or injuries, is called surgery.

*On May 6, 1884, Dr. M. L. Rhein read a paper before the First District Dental Society of the State of New York entitled, "Oral Hygiene." This paper was published in the "New England Journal of Dentistry" in October, 1884. The following is a quotation from Dr. Rhein's paper on "Oral Hygiene":

"This subject, commonly considered so simple as to deserve only a passing notice, assumes, in my eyes, a position of vital importance; and the frequency with which it has been considered in other societies during the past year indicates that we are at least awakening to the value of *prophylaxis* in our department of medicine, with the full hope and expectation of avoiding many dreaded diseased conditions.

"ORAL HYGIENE may be summed up in one word, *cleanliness*. Keep the mouth in a perfectly clean condition, and the number of those terrible diseases would decrease; maintain the normal condition of the secretions, and the number would be still further reduced. How much rarer the cases of pyorrhea alveolaris and pericementitis we would meet if people would keep their teeth as clean as their faces! How rare would be the cases of exposed pulp if food was never permitted to ferment between the teeth! I shall not, however, consume time by repeating all the evils that can be either prevented or at least alleviated by this seemingly simple prescription. To keep the teeth clean sounds like such a simple thing that it often deceives doctors as well as patients.

Dentistry.

Dentistry is defined in the new (1910) edition of the *Encyclopedia Britannica* as "A special department of medical science."

Prophylaxis.

Prophylaxis is defined as follows:

The *Century Dictionary* says it is "the guarding against the attack of some disease."

The *Standard Dictionary* calls it "preservative or preventive treatment for disease."

Webster's Dictionary defines it as "The art of guarding against, preserving from, or preventing disease; the observance of all the rules necessary to preserve health."

Essentially the same definitions are given by a dozen other lexicons and encyclopedias, both general and medical, in the English language. Nothing in any of them restricts prophylaxis by qualifying it as a purely surgical procedure. The same is true of the definitions given by the official dictionaries of the French, Spanish and Italian academies, and by the standard authorities in the German language. The authoritative *Dictionary of the French Academy* defines prophylaxis as "The art of preventing the development or the recurrence of disease." This broadens its scope still further.

A prophylactic is anything which preserves or defends against disease; a preventive.

"Prophylactic," used as an adjective, means "preservative, preventive, defending from disease."

Hygiene. Hygiene is the science and art of all that tends to the maintenance and improvement of health, the prevention or shortening the duration of diseases, and the prolongation of life.

Anaphylaxis. Anaphylaxis: This is a new term in medicine, made necessary by the rapid progress of serum and vaccine therapy. It means, literally, "Something antagonistic to the protection of the individual," and is thus the opposite of prophylaxis.

"When we consider the close juxtaposition of the teeth to each other, oftentimes the irregular position they assume in the arch and, most important of all, the frequency of taking food or other articles into the mouth which may become lodged around the teeth, and the resulting fermentation proceeding upon its work of destruction—then we see that the rule is not so very easy to follow, and sooner or later the patient must have his prescription amended, to read, *Keep your teeth as clean as possible.*

"It is our duty, then, to take some of our valuable time and show people by careful manipulation how very little they know about this sanitary measure. How many of us do this, and if we do it for some patients, why do we not perform the same duty for all who intrust themselves to our care? Too often, in the hurry and strife of our daily life, do we neglect this all-important duty." EDITOR.



Dr. Isaac Watts, in his work on "*Logic*," speaking of "*The Comprehensive Conception of Things*," says: "Medicine is justly distributed into prophylactick, or the art of preserving health; and therapeutick, or the art of restoring health: for there is no other sort of medicine besides these two." Therapeutics has, until a very recent period, ruled predominantly in medicine and dentistry, and we have been chiefly concerned with becoming skilled therapeutists instead of devoting more time and attention to cultivating the sister art of prophylaxis, and winning the blessings of mankind by becoming trained "prophylactists" (if I may coin a word), or preventers of disease.

In numerous writings that have appeared in our dental literature on the subject of prophylaxis during recent years, the impression is often conveyed that keeping the mouth free from calcific and other deposits, and from food debris, combined with the more or less regular use of the toothbrush and antiseptics and detergents, constitute the sum of our defensive measures against diseases of the mouth. That this narrow view is not upheld by authorities whom we all recognize as such in their several fields, I shall endeavor to show in the course of this paper.

Dr. W. D. Miller German work, "*Lehrbuch der Konservierenden Zahnheilkunde*," says: "By means of prophylactic measures we endeavor to prevent the appearance of caries and of other pathological conditions of the teeth, or to curtail, in so far as possible, the havoc already wrought by them. We are here concerned with a part of dental science the true significance of which, as regards the preservation of the teeth, has not been given the measure of attention to which it is entitled." Then he proceeds: "The prophylaxis of diseases of the teeth is carried out in three directions, namely:

"(1) By means of operative intervention.

"(2) By measures which bring about a strong, healthy development of the teeth.

"(3) By means of personal hygienic measures on the part of the individual (*Zahnpflege*)."
Under this last heading he discusses the effects of foodstuffs and the use of toothbrushes, antiseptics and detergents.

Dr. Charles B. Atkinson From the article referred to at the beginning of this paper, by Dr. Atkinson, as being the *first comprehensive treatment* of this subject, permit me to quote, as follows:

"Prophylaxis presents four closely related and two attendant aspects for consideration:

"(1) Prevention, properly a broad effort of education to teach to avoid.

"(2) Diet, a means of preparation of the system to assist prevention.

"(3) Hygiene, a regulation of circumstances governing.

"(4) Regimen, ruling of the use of system, food, article and circumstance under the instruction of the preceding aspects. Add to these operative and medicinal interference in the progress of disordered and diseased conditions, and the breadth of prophylaxis is before us. Of prophylaxis it is first required to subdue the ignorance of the public at large as to hygiene, diet and personal care, so that teeth may be supported and aided to attain, and be maintained in a healthful condition." Dr. Atkinson's admirable article is worthy of extended quotation, but one more excerpt must suffice. He says: "The study of individual requirements, based upon individual structure, endowment and environment, embracing physical, mental and circumstantial characteristics, seems to be the line of investigation that will present facts upon which to predicate acts of guidance (advice), which offers the highest expression of professional service, prophylaxis. This advances dentistry to an ideal position!"

The above was written twenty years ago, before our present extended knowledge of oral pathology, of susceptibility and immunity, of diagnosis by salivary analysis, and of serum and vaccine therapy, had become diffused throughout the profession by the publication of the results of the investigations of Miller, Goadby, Ehrlich, Koch, Metchnikoff, Michaels, Wright, and many others. I trust that when the history of the "*Era of Prophylaxis in Dentistry*" shall be written, full honor may be done to the memory of this pioneer in the field; and I am glad of this opportunity to pay him a tribute of appreciation for the insight his words have given me into the real significance of prophylaxis and of dentistry as a potent factor in the health and happiness of mankind.

It is unfortunate that the ideas promulgated in

Dr. D. D. Smith and Prophylaxis. the above-mentioned article by Dr. Atkinson were not immediately accepted by the profession; but they remained buried in the graveyard of dental literature, and it was not until October, 1898, that Dr. D. D. Smith, of Philadelphia, again brought the subject of prophylaxis prominently before us, and acquainted us with his excellent methods and technic of "prophylaxis treatment," which are familiar to you all. In an editorial in the October, 1906, number of *The Dental Register*, Dr. N. S. Hoff describes what he saw during a visit to Dr. Smith's office. He says that oral prophylaxis includes "The complete arrest of decay in deciduous teeth, and practically of all new decay in adult teeth; return of abnormally sensitive gum tissue to its normal sensibility; eradication of all gingivitis and tendency to



alveolar pyorrhea; and the extirpation of the mouth infection. We found (he says) that 'oral prophylaxis' meant a good deal more than mere scaling and periodic polishing. Of course, the teeth were carefully scaled and beautifully polished; but, in addition, each tooth, which was in any way impaired, was restored to its normal contour by filling; all missing teeth were supplied by a system of bridgework."

Although following in practice many phases of the technic laid down by Dr. Smith to bring about and maintain oral cleanliness, your essayist cannot endorse the narrow definition which he has given the term prophylaxis in his paper in the *Dental Brief* for June, 1911, where he says: "As the first to use the term in dentistry, we may without due liberty apply its definition. Prophylaxis is properly defined as a treatment involving surgical manipulation, in distinction to treatment by systemic medication or therapy. Hence, oral prophylaxis is a surgical treatment of the mouth and teeth in contradiction to local or general medication, the use of a germicide or any local application."

Your essayist has already shown that prophylaxis was defined for us *seven years before* this last writer's first communication on the subject; he has given you the opinions of the world's foremost lexicographers as to the meaning of the term, and he would leave it to your judgment to decide whether the quotation given above is not rather retrogressive than progressive, as applied to prophylaxis and its relation to dentistry as a department of medicine, keeping pace with the latter in the ever widening field of preventive treatment. If he might give expression to an opinion your essayist would say that this conception of prophylaxis as a purely surgical procedure will remain unique with its originator, and will not be accepted by the profession at large as embracing all there is to the prevention of mouth diseases and, *pari passu*, of diseases of the body as a whole. It is not in accord with the construction placed upon the term by general medicine, and by those of our specialty who look upon ourselves as something more than merely trained mechanicians or surgeons; who feel that we are practicing an important department of the science and art of medicine, *and who have not divorced the mouth and its contents from their intimate relations with the remainder of the body, and subject to the same metabolic laws which govern the whole organism.*

**The Writer's
Conception
of Prophylaxis.** The meaning of prophylaxis is broad and far-reaching in its scope, and requires that the dentist who would be successful in its practice must be a trained diagnostician, who heeds the danger signals which Nature displays when disease is impending.

and who hastens to her relief before irreparable injury has been done; an expert in the use of the various prophylactic and therapeutic measures



required for the preservation and recovery of health, in so far as this may be dependent upon, or affect, oral conditions; and he should possess, as an indispensable condition for success, that invaluable, almost instinctive gift of the trained clinician—a "pathological sense" which, in the words of Dr. James Truman, "may enable the operator mentally to grasp, with clear prescience, the results that may follow the operations which we are called upon to perform, *and the influences that these may exert upon the entire organism.*"

Your essayist's conception of the scope of prophylaxis in dentistry may be considered under the following heads:

First.—The consideration of dental caries, pyorrhea alveolaris, stomatitis, various forms of gingivitis, and of diseases of the dental pulp, as well as certain disorders of the maxillary bones, such as necrosis, antral infections, and the lesions of syphilis and tuberculosis, as preventable diseases of bacterial origin to be combatted by all the means at present at our command:

(a) By endeavoring to bring about the development of strong, resistant dental and other oral tissues in the child by supplying to the mother, during the period of gestation and lactation, a sufficient amount of the iron, calcium and phosphatic nutrition needed for the formation and normal growth of those tissues. Investigators have shown that rachitis, with its concomitant oral manifestations, may be the result of improper nourishment during the period preceding, as well as that following, birth. Dr. W. D. Calvin, in an article on the etiology of congenital cleft palate and hare-lip, speaks of an insufficiency of calcium phosphate in the physical economy of the pregnant mother as a source of faulty development of the palate bones. Miller emphasizes the necessity of calcium and phosphorous compounds in the diet in the development of the teeth, and Mummery, writing in *Nature*, in 1894, speaks of the structural defects due to imperfect nutrition during the developmental period.

(b) By attention to the health of the mouth from birth, teaching parents methods of general and of oral prophylaxis, which they may carry out until the appearance of the teeth in the child's mouth, when the use of the toothbrush and the thorough mastication of foods, which will exercise the teeth and jaws in the manner intended by Nature, should be inculcated. The necessity for a diet that will require efficient mastication, not alone for its nutritional effects but also on account of the exercise it gives the jaws, the stimulation of the oral tissues, and the detergent action of such foods on the teeth, with a correspondingly free flow of saliva to wash out and dissolve particles of carbohydrate food that may remain in the interproximal spaces and other places around the teeth, is emphasized by Miller, of Germany; K. Goadby, J. Sim Wallace, and Campbell, of



England; and by Wenyon, who compares the fine teeth of the older generations of Scotchmen, who lived active outdoor lives and "Worked until the tough bannock in their pockets became a tempting meal," with the teeth of their grandchildren living under less healthful conditions and afflicted "With general caries, and many young girls almost edentulous." Wallace also tells us of the fine teeth of the South African natives, much worn by mastication but very free from caries; and Ratzel's "History of Mankind" says these people live on sour milk and bruised maize, and much boiled and roast meat, which requires thorough mastication.

Under this heading may be included also the application to the teeth of preventatives like silver nitrate, as recommended by Miller and Prinz, and such cleansing operations by the dentist as may become necessary to aid in keeping the mouth in a perfect condition of health. We may also mention here prophylactic measures for the prevention of dental caries and other oral disorders, which are often especially active during those periods of stress in the life of woman when the organism is adjusting itself to the changes in the functional activity of the generative organs, *i.e.*, the appearance of menstruation, gestation and lactation, and the climacteric.

(c) By means of fillings where needed to repair the ravages of dental caries when the patient first comes into our care, as a prophylactic measure against pulp infection and its sequelæ. Here Dr. Black's great principle of "extension for prevention" becomes a most important factor in delimiting the progress of the disease and preventing recurrence. Also, by the cure of diseased pulps and diseases of the pericementum, alveoli and other oral tissues, to prevent infection in healthy contiguous parts.

Second—The prevention of the various systemic disturbances due to autointoxication from the formation of pus in the mouth, or to pus absorption from abscessed teeth, causing a general septicemia; and the prevention of the reflex disorders and nervous manifestations due to dentition, impaction and other oral diseases. Drs. Grayson, of Philadelphia; Hopkins, of Boston; Barnhill, of Indianapolis; Power, of Providence; Lodge, of Cleveland; Grieves, of Baltimore, and many others have shown how diseases of the ear, eye, nose and throat, tonsils and glands of the neck may be traced directly to dental lesions. They have also shown the occurrence of ankylosis of the jaws, inflammation of the valves of the heart after pneumonia traced to infection from the oral cavity, tuberculosis, rheumatism of the knee, ankle and elbow, gastro-intestinal disturbances and general septicemia, due to diseased teeth. Hopkins says that an erupting third molar, without giving great pain, may cause enough irritation and absorption of pus to give a chain of symptoms puzzlingly like those of a mild attack of typhoid.



Various writers on reflex disturbances and on neurology have shown the close relation of *otitis media*, fever, indigestion, diarrhea and convulsions to eruption of the deciduous teeth and of the first permanent molar; and how impactions of the third molars and of the cuspids and diseased pulps, malignant tongue disease, abscessed teeth, acute and chronic pulpal inflammation, exostosis, sensitive dentine, tumors, unextracted broken pieces of roots of teeth, pulp-stones, etc. (sometimes unassociated with pain, as shown by Upson), may be the cause of tonsillitis, acute rhinitis, neuralgia, earache, headache, deafness, sciatica, visual disturbances, epilepsy, chorea, paralysis, insomnia, melancholia, various maniacal forms of insanity, and even death. Upson has also shown how impactions have seemed to be the cause of melancholia, mania, and *dementia precox* in the young, and cites cases of melancholia, sleeplessness, delusions, incoherency, hysteria, suicidal mania, etc., sometimes associated with no pain, which have been cured by extraction of diseased teeth.

Brav has shown the value of oral prophylaxis in preventing eye troubles. Deaver says that the term neuralgia is strongly suggestive of what Dr. Oliver Wendell Holmes calls "The learned ignorance of a nomenclature," and was coined in the day of clinical observation, which will doubtless always precede a knowledge of pathogenesis. Yet the condition known as neuralgia by the dentist, *i.e.*, pain somewhere along the course of the trigeminus, is such a common one and so often related to dental disorders that it behoves us to study it well and take timely measures for its prevention.

Third—The third element in prophylaxis is the prevention of traumatic injuries (and possibly of new growths) that may be caused by imperfect or unpolished fillings, malformed, broken or misplaced teeth, or by defective prosthetic appliances. Also the prevention of such disorders (generally the result of industrial employment) as phosphorous, lead or other metallic poisonings, and of the various new growths, in so far as this may be possible in the light of the present doubtful etiology of the latter. A recent writer on cancer has said that it may be caused by chronic irritation of some sort.

Fourth—The prevention of erosion on the teeth of arthritic individuals, both by the local and the constitutional means at present at our disposal, since erosion may cause loss of the crowns of the teeth or erosion cavities may become infected with caries should the acid secretion of the buccal and labial glands cease and the mouth reaction become alkaline. How we may advise antidiabetic diet and the use of antacids locally, as also the administration of alkaline drugs, such as are indicated in the treatment of uricacidemia and other diseases of suboxidation, as recom-



mended by Dr. E. C. Kirk (*Dental Cosmos*, August, 1908: "The Constitutional Element in Certain Dental Disorders").

Fifth—The correction of irregularities of the permanent denture, and the prevention of them by care and regulation of the deciduous teeth, when indicated, malocclusion being a prime cause of oral and of general disease. Under this heading I refer to an article by Dr. F. C. Kemple, in *Dental Cosmos* for April, 1907: "*Orthodontia as a Prophylactic Measure*"; to another by Dr. R. H. W. Strang, in *Dental Cosmos* for August, 1908: "*Preventive Dentistry in Its Relation to Malocclusion*," and to the teachings of many of our specialists in pyorrhea alveolaris. In a splendid recent study of pyorrhea, by Dr. Hopewell-Smith (*Dental Cosmos*, September, 1911), the author mentions over-use of a tooth or loss of function as a predisposing cause of this disease, and clinical experience will undoubtedly recall to your minds many similar cases.

Sixth—Under this heading we include the preservation of correct occlusion and the prevention of digestive and other disturbances by restoring lost teeth through hygienic prosthetic appliances. In this connection, a study of the work of Professor Michel, of Wurzburg, and of Baron von Oefele, of New York, on fecal analysis, embodied in a recent report to the Dental Society of the State of New York, will leave no room for doubting either the necessity for a complete masticatory apparatus in the prophylaxis of diseases of the intestinal tract or the nutritional imbalance that may be caused by defective mastication. Here I would also recommend the study of Dr. C. S. Butler's recent paper on "*The Pathology of Artificial Dentures*" (*Dental Cosmos*, August, 1911).

Seventh—To the above may be added, as our knowledge of the conditions which govern susceptibility and immunity increases, a seventh factor in prophylaxis: the prevention of oral diseases by means of agents acting through the blood and the saliva, and by "correction and balancing of the food ration," thus aiding the natural defensive forces of the organism to do their work. As this phase of prophylaxis still remains almost fallow ground for the dental scientist, and the one in which future developments of tremendous importance may be looked for, it is worthy of more extended treatment.

Bacterial Vaccines in Prophylaxis.

Some members of the dental profession are already making use of autogenous bacterial vaccines in the treatment of pyorrhea alveolaris, and should their efforts meet with general success we may in the future give our patients prophylactic inoculations of "pyorrhea vaccines" in the same manner that the United States Army soldiers now receive regular administrations of typhoid vaccine to bring about an acquired active immunity

against this disease. A very comprehensive paper on this subject, and the question of the determination of the opsonic index was read before this society and published in ITEMS OF INTEREST for March, 1909: "Bacterial Vaccines in the Treatment of Pyorrhea Alveolaris," by Theodore Hecker, of Kansas. Although Sir A. E. Wright elaborated a complicated system to serve as an infallible guide in the administration of bacterial vaccines, which consisted in taking the opsonic index, one of the foremost laboratories for the production of serums and vaccines in this country, is authority for the statement that the opsonic index has proved so unreliable, even in the most competent hands, that to-day it is practically disregarded by many of the best authorities in vaccine therapy—to some extent even by Wright himself, though he still stoutly maintains the necessity for its use in certain cases. The reports of the treatment of oral disease by means of bacterial vaccines are not thus far very encouraging either, and we must be careful how we employ them, especially on account of the possible dangers from anaphylaxis associated with their administration.

Anaphylaxis.

As this is a subject of intense interest to all who are following the advance of medical science, and especially of vaccine and serum therapy, and since it has not, so far as I am aware, been hitherto discussed in its relation to the employment of vaccines for the treatment of pyorrhea alveolaris, although the subject of vaccine therapy has had considerable discussion by the dental profession, let us rapidly review some of its main features.

With the rapid advance in vaccine and serum therapy, there is springing up a considerable literature on anaphylaxis, the antithesis of prophylaxis. Richet injected into animals non-lethal doses of actinocongestin, a proteid derived from the star-fish. After a definite period, the animal was again injected with an even smaller amount, which was followed by grave symptoms, and even by death. This phenomenon he called anaphylaxis. About twenty per cent. of persons are said to exhibit intolerance to the injection of antitoxic serums, and the results may follow primary inoculation, although more frequent on reinoculation. Intolerance or unusual susceptibility has been observed in the use of antidiphtheritic serum, and the phenomenon has been attributed not to the antitoxin but to the horse serum containing it. Methods tending to reduce the anaphylactic toxicity of certain serums, without changing their antitoxic action, have been tried but have not proven successful. I am indebted to Dr. R. G. Eccles, of Brooklyn, for many of the following facts regarding anaphylaxis. An interesting paper by him appeared in the *Medical Record* for August 12, 1911: "A Darwinian Interpretation of Anaphylaxis."



The first special study of this subject, which is known as anaphylaxis, allergy, serum sickness, hypersusceptibility, hypersensitiveness, etc., was contained in a report by Dr. Otto, of Berlin, in 1906, on the "*Theobald-Smith Phenomenon*" of Ehrlich, and it marks a new era in medical science.

Recently the startling fact was made known that "one-millionth of a cubic centimeter of a five per cent. solution of a three times crystallized egg albumin, or one-twentieth of a millionth of a grain of proteid, will sensitize a guinea-pig so that distinct and typical symptoms are produced after a second injection of the same material; while one fifty-thousandth of a cubic centimeter of solution, containing but one-millionth of a gram of proteid, sensitizes fatally. Friedberger says that a tenth of a milligram of the serum of a sheep, injected subcutaneously into a guinea-pig, followed in ten days by five milligrams of the same proteid injected into a vein, causes convulsions, asphyxia and death. This means that about one-sixty-sixth thousandth of a grain of egg-white injected into the blood-stream may be as fatal to an animal like the guinea-pig as a bullet through its heart. In the light of such amazing potency of action the toxicity of prussic acid or of strychnine sinks into insignificance.

We find in studying the subject of anaphylaxis that it is always what Eccles calls *alien proteid* that does harm. The individual's own proteids, or even those from members of its own species, seem harmless.

Willis and Osborne have also found that plant proteids have the same fatal power, and that they cause the same typical anaphylaxis phenomena as when animal proteids are used. Hence, from our definition of bacteria as microscopic unicellular vegetable organisms, we can easily see how the *alien proteids* contained in bacterial vaccines may cause anaphylactic reactions in susceptible individuals analogous to those produced by the anti-toxic serums.

Lewis tells us that "The phenomenon of anaphylaxis with bacterial vaccines responds exactly with the anaphylaxis to such proteids as serum and egg-white." Bergey has also produced anaphylaxis with four common saprophytic bacteria. Many others, both here and abroad, says Eccles, have had similar results, so that we may consider it as a well-established fact that dead bacteria, introduced into the body in the form of suspensions in sterile water, in spaced injections about ten days apart, produce disease symptoms of a pronounced character.

Moschowitz has shown, moreover, that all the diseases associated with anaphylactic reactions, such as asthma, hay fever, urticaria, skin diseases of the so-called "exudative diathesis," eclampsia, goiter, migraine and epilepsy (all associated also, more or less distinctly, with the neurotic diathesis), possess one factor in common—an eosinophilia; and that "the invasion of eosinophiles in increased numbers into the organism is the

expression of an active agent or the agent itself in the production of anaphylaxis." He also declares that eosinophilia, like the neurotic diathesis, is frequently inherited. From this Donaldson concludes that a susceptibility to anaphylaxis phenomena is present in those with an acquired or a congenital eosinophilia.

"It thus seems," says Dr. Eccles, "that at last we are on the track of an all-embracing principle with which to link medical facts together, rationally, as in the well-advanced inductive sciences. Such a view, if established, is certain to revolutionize medicine as completely as the inductive sciences have been revolutionized during the last century, and for the same reason. 'The discovery of new facts,' says Bancroft, 'make a subject more complex and more difficult to grasp. The discovery of new relations simplifies matters because it enables us to get a better grasp of the subject.' This relating of all medical phenomena under a common principle will simplify medicine for its students to such an extent that it will literally introduce a new era."

Much more might be said on this fascinating subject of anaphylaxis from the standpoints of medicine and of biology which will, I trust, be brought out in the discussion. One more thought I wish to leave with you, however. We must stand in wonderment at the delicate balancing of the chemistry of our bodies when we realize that one ten-millionth of a gram of proteid (the main element in the protoplasm of our bodies, which, in turn, is the physical basis of life, according to Huxley), our vitally essential food, should be able, when not passed through our digestive laboratory, but introduced directly into the blood-stream, to so profoundly influence that balance as to cause grave symptoms when the injection is repeated. From this we see the necessity for great care and a careful study of all the diathetic factors connected with each individual case in which vaccine therapy is to be employed; and your essayist is of the opinion that the dental profession will not accept vaccine therapy as a practical and universal aid in the treatment and prophylaxis of pyorrhea alveolaris until more numerous and favorable reports are received regarding its value, and until the phenomenon of anaphylaxis and its dangers have been more thoroughly studied.

**The Salvia
in Prophylaxis.**

Our knowledge of the saliva and its influence as a factor in susceptibility and immunity, is also still too limited for us to look upon it as an unfailing guide in our efforts at the extermination of mouth diseases. This body secretion is not yet sufficiently amenable to control to become a channel through which practical measures of prophylaxis may be positively and scientifically instituted by the dentist. Some satisfactory



results have, it is true, been obtained in the treatment of erosion in arthritic subjects through modification of the acid saliva by repeated doses of pure phosphorous in olive oil, combined with the glycerophosphates of lime and soda and an anti-diabetic diet, reducing the carbohydrates to a minimum. Your essayist has had a fairly successful result in a very severe case of erosion in which the enamel was almost entirely gone from all the teeth, the saliva being extremely acid. In four weeks under this treatment the saliva became very much less acid and, at times, showed a distinct alkaline reaction.

We also know that in cases of threatening septicemia, as from a severe alveolar abscess, or in autointoxication from a bad case of pyorrhea alveolaris, regular doses of potassium iodide will exhibit the alternative effect of the drug, acting as an absorbent and a stimulant of leucocytosis; and within ten to fifteen minutes after the iodide is taken, iodine can be demonstrated in the saliva by either the classic starch and chlorine test or the nitrous acid test. The iodide also probably exerts a local anti-septic action by setting free iodine at the points of elimination. I have had some very encouraging results from the following prescription in such cases:

R Potassium iodidi.....dram jss.
Syr. Sarsaparillæ comp.....fluidounces iij.
M. Sig.: Dram 1 in water T. I. D. after meals.

In very severe cases the dose of the iodide may be doubled to advantage for a few days.

**Cathartics
in Prophylaxis.**

In his paper on "*Beginnings of Pyorrhea Alveolaris*," read before this society in January, 1911, Dr. G. V. Black, of Chicago, showed that the use of saline cathartics caused the deposit of salivary calculus to stop completely within a few hours, even when such deposits accumulated rapidly and continuously before; and that such stoppage continued from one to four weeks after the dose was taken. He also showed the effects of limitation of the amounts of food ingested on these deposits, and how he could bring them on almost at will by too abundant alimentation. These are hints of great significance in the prophylaxis of the mouth. Dr. Black believes that the excess of food taken probably causes a larger amount of chyle to be formed than can be properly assimilated, leading to errors in metabolism and the formation of the agglutinating or colloidal substance, which is deposited on the teeth before the calculary deposit. The cathartics act by increasing elimination by another route.

I might mention here also the value of the saliva as a diagnostic factor in conditions associated with indicanuria and acetonuria. Dr. Kirk, of the University of Pennsylvania, has for several years demonstrated the presence of indol (indican) and acetone in human saliva, following the method of Michaels for their detection, and he is of the opinion that their presence has the same pathological significance as when found in the urine, and that their appearance in the saliva indicates a rather higher percentage of these substances in the blood-stream than their existence in the urine alone would.

**Saliva in the
Prophylaxis of
Dental Caries.**

But the question of the saliva as a factor in the prophylaxis of that widespread scourge of civilization, dental caries, needs still to be worked out. In spite of the enormous amount of research work that has been done by many investigators, the efforts at the solution of the problem, Why caries attacks the teeth in one mouth, while in another mouth, under apparently less favorable conditions, it does not, seem thus far but a groping in the dark. "We must still discover," as Goadby says, "the ultimate liberating cause too often overlooked in the multiplication of predisposing ones." While it is probably true that lactic acid bacteria exist in the mouths of caries immunes in practically the same amount as in the mouths of susceptible individuals, as shown by Miller and Black, we do not yet know what environmental change it is that renders it possible for these same bacteria to become active caries producers in the one case, and remain without deleterious activity in the other.

Michaels and others have pointed out the instability or lack of uniformity in the composition of the saliva; but efforts to isolate from the latter, or conclusively prove the existence therein, under pathological conditions, of a pabulum upon which the caries producing bacteria may thrive, and the estimation of the kind and quantity of this pabulum required to bring about a change from a condition of apparent immunity to one of susceptibility to caries, have not yet proven successful. Our saliva experts have not yet evolved for us a test which has, as regards dental caries, a scientific value in demonstrating a condition of susceptibility or immunity to this disease comparable, for instance, with the delicate Wassermann reaction in the diagnosis of syphilis and other spirochete diseases.

**Potassium Sulfocyanate
in Prophylaxis
of Caries.** Much was written a few years ago regarding the value of potassium sulfocyanate in the saliva in the prophylaxis of dental caries, and elaborate experiments were carried on under the auspices of one of our state societies in the endeavor to increase the amount of this substance, or to supply it when lacking in the saliva. It:



ITEMS OF INTEREST

was thought that this chemical salt was the cause of the so-called "germical power" of this little understood, protean body secretion, although Michaels, in his studies of saliva symptomatology, evidently believes that it is the cause of what he calls "chemical abrasion," *i.e.*, erosion of the teeth. A consideration of the opinions of Hugenschmidt, Galippe, Kirk, Miller and Black, that the saliva *per se* has no germicidal power, and that potassium sulfocyanate has no effect on bacterial growth "in any strength less than five times the maximum amount found in the normal saliva," seems, however, to have removed this subject from serious consideration, and to have relegated potassium sulfocyanate to its legitimate sphere of action as a valuable test for iron occurring as a ferric salt.

There still remains a splendid opportunity for the discovery of what Ehrlich calls a "*therapia sterilisans magna*" for dental caries. When the Ehrlich of our profession appears he will deserve even better of mankind than the brilliant German savant, since dental caries afflicts over eighty per cent. of the civilized world.

We must not lose sight of the fact that the dentist has a powerful aid in his efforts at preserving the health of the mouth in the natural defensive forces existing in the organism, as shown by Hugenschmidt, Miller, Sajous, and others. I can only briefly review them here:

(1) The property of leucocytosis, or the peculiar property possessed by the leucocytes to direct themselves to a certain point when actuated by any circumstance which arouses their chemiotactile sensibility. This sensibility may be brought into play by the toxins produced in the saliva by the micro-organisms of the mouth, and leucocytosis is probably one of the principal factors active in the rapid healing of wounds of the mucous membrane.

(2) The vital antagonism existing between many bacteria. Possibly also the opposite condition, called symbiosis or consortium, which is supposed to exist in parts of the alimentary tract, especially in the intestines.

(3) The constant desquamation of the buccal epithelium, due to the property of stratified pavement epithelium to constantly renew itself. This is especially active during mastication, and the epithelium thus removed probably carries with it many bacteria, which pass into the stomach and are destroyed.

(4) The attenuation of the virulence of bacteria by the mucus of the saliva and the transuded serum, as from a wound.

(5) The "adrenal system" of Sajous, which he claims is the great protective system of the body, imperfectly developed in the young. This system is supposed to be controlled by the pituitary body, or *hypophysis*

Natural Defensive Forces in Prophylaxis.

cerebri, a small, reddish-gray mass occupying the *sella turcica* of the sphenoid bone, and includes the ductless glands of internal secretion, the suprarenal capsules, the spleen, the pancreas and the thyroid. Cushing says that it is impossible to remove the hypophysis even partially without producing marked alterations in all other glands, thyroid, parathyroid, adrenal, testicles, ovaries, islands of Langerhans and the thymus. Dock reaches the conclusion that "It is probable that the relation of the pituitary to other organs and to diseases is closely associated with the production by various parts of the pituitary of 'hormones,' i.e., activating or stimulating substances with obscure but important effects upon numerous organs, ductless, sexual and others, as well as upon metabolism, including growth." Other observers have shown that hypophyseal extracts stimulate metabolism and modify the excretion of nitrogen, phosphorous and calcium. When this "adrenal system" becomes fully developed after puberty, it may be that the saliva is furnished with some antitoxic substance, or *hormone*, with which to counteract the products of the zymogenic bacteria, or to prevent the proliferation of the latter. May not this account for the comparative freedom from dental caries, i.e., relative immunity, possessed by most of us after the age of about fifteen? An important point to remember in connection with these *hormones*, as pointed out recently by Borchhart, is that the over and under production of *hormones* stand in close relationship with carbohydrate metabolism.

**Metabolism
and Dietetics
in Prophylaxis.**

In his efforts to preserve the health of the parts essentially within his province to care for and, if he would do his whole duty, of the organism as a whole, the dentist who would practice true prophylaxis must search "farther back than a dirty mouth" (as an editorial in *Dental Cosmos* puts it), for the ultimate predisposing causes of oral and dental disease. He must recognize that normal health means "the harmonious adaptation of internal relations to external relations"; that in perfect health anabolism and catabolism should balance; that physiology means "the application of the laws of chemistry and physics to life," so that we are rapidly learning to express many vital processes in terms of exact chemical equations; and that when the perfect balance of metabolism is disturbed, there may follow the elaboration of toxic end-products in the system which, through faulty action of the eliminative organs, may be absorbed into the blood and manifest their effects in the mouth, not alone by a dyscrasia of the saliva, but also by a lowering of the vital resistance of all the oral tissues, with consequent susceptibility to disease. Hence, we endeavor to sustain the normal functioning of these tissues by getting rid of, and preventing all, local sources of disease in the mouth, and by the prescription of fresh air, good food (in as near



physiological quantities as practicable), exercise, and other prophylactic and therapeutic measures, to prevent or overcome the effects caused by the absorption of toxic products due to fermentation or putrefaction in some other part of the alimentary tract. There is good authority for the belief held by many that the accumulation and fermentation of food debris in the mouth, and the toxic products generated through faulty elimination in some other part of the alimentary tract play an important rôle in the production of conditions which favor the elaboration of the acids that bring about tooth decalcification. Miller, in his "*Text-book of Preservative Dentistry*," referred to at the beginning of this paper, says: "The acids needed in the decalcification of the tooth substance are formed principally by fermentation of particles of food containing starch and sugar, found in places adapted for their retention (Retentionsstellen). Starchy substances he considers more dangerous than sugar, since the latter, being more soluble, is sooner carried off, and thus rendered harmless. Starch, however, remains clinging to the teeth during longer intervals, and thus produces a more lasting effect. Sticky, adherent articles of food, rich in carbohydrates, such as soft cakes, soft bread, chocolate, etc., should, in the interests of efficient mouth hygiene, be entirely prohibited, especially in the case of children. These conclusions are also confirmed by Dr. Louis Otoffy, from his study of "*The Teeth of the Igorrotes*" (*Dental Cosmos*, July, 1908). This savage tribe of the Philippine Islands is as yet unspoiled by civilization, and lives under the most primitive conditions. He attributes the comparative freedom from caries of the teeth of these people partly to the absence of sugar and saccharine substances in their diet, and also to their habit of not cooking their food to the extent practiced in civilized communities. The native Filipinos, of Manila, however, who use thoroughly cooked food, and chew much sugarcane, are greatly afflicted with dental caries. Your essayist can also confirm these statements from extensive personal observation, during four years, of the deplorable state of the teeth of the inhabitants of the sugar-producing countries of Cuba and Porto Rico, where caries is rampant. These people themselves attribute this condition to the large consumption of sweets and the chewing of the raw sugarcane.

Dr. P. R. Howe, in his article on "*Dietetic Effects in Oral Secretions*" (*Dental Cosmos*, January, 1911), speaks of the "triple line of defense" against the entrance of toxins into the system, meaning thereby the mucous membrane of the intestinal tract, the liver, and the antitoxic glands, which produce oxidizing or reducing agents, and the destructive effects the products of fermentation may cause when one of these "defensive barriers" is weakened, and the work of elimination is performed vicariously by other organs, amongst which we may include the salivary

glands and mucous follicles. Then he makes this significant statement: "These very insidious toxins, of an excrementitious nature, are potent factors in the direct alteration of the oral secretions. They have scientifically been proved to be able to arrest development, to bring about dwarfishness, and to break down the natural defenses of the economy; and they are of as vital importance to oral conditions as they are to those of any other part of the system." Confirming this statement, your essayist would refer to the work of Fede and Jovane, who produced experimental rachitis in animals by the injection of solutions of the fecal matter of rachitic children, as reported by Cavallaro in his study of syphilis in dentition. Michaels, in his work on sialo-semeiology, and Doubleday have shown, moreover, that glucose, bile pigments, bile salts and leucin may be present in the saliva under pathological conditions, glucose being responsible for certain oral maladies, such as softened or bleeding gums and denuded teeth. Also that "fatty and uric acids, lactic and oxalic acids, acetone and sulfocyanids are the acid matters which have a great affinity for the calcium of the teeth." If the hypothetic action of the sulfocyanates of potassium and ammonium, as given by Doubleday (*Dental Cosmos*, Vol. LI, p. 413) is correct, it adds another link to the chain of evidence against the value of the sulfocyanates in the saliva. He says: "They dissolve the ossein of the teeth, expose their mineral elements, and unite with them to form sulfocyanid of calcium and soluble phosphates of potassium and ammonium."

Since the question of the food and its effects on metabolism seem thus intimately bound up with the question of susceptibility and immunity, the dentist, as the physician of the mouth, should study the subject of dietetics carefully, and advise his patients regarding their food habits, endeavoring in this way to aid in the great movement for dietetic righteousness now being agitated by Fletcher, Chittenden, and others. That a complete control of this phase of hygiene will ever be accomplished by those of us who believe that the "true prophylaxis of dental caries will come through the correction and balancing of the food ration," seems almost too utopian a hope to be entertained. I am inclined to agree with Dr. K. Goadby when he says that it is an impossible task to change the food of a nation. So long as the indulgence of parents and those who have the care and rearing of children exists, and the purchasing power of the penny continues, in spite of warnings and the dictates of conscience, to exert its allurements over the child's mind for the gratification of its instinctive or acquired love for candy or other toothsome articles of diet, so long will it be impossible to properly control our children's food habits; and, as to the adult, the history of civilization shows that improvements in the art of gastronomy and increase in the number of the disciples of



Lucullus, as well as an increase in the diseases due to too-abundant alimentation, have ever kept pace with the advance in wealth and leisure, in spite of the precepts and examples of a Cornaro or a Fletcher.

**Prophylaxis
and the Oral
Hygiene Campaign.**

I think we will all admit that the final success of the oral hygiene propaganda, now spreading over the whole country, lies in preaching the gospel of prophylaxis and in teaching the masses—those ten or more millions who, according to Robert Hunter, are always just on the verge of starvation, and could not afford to pay for dental services in any case, and those other forty to fifty millions who must be without *adequate* dental attention through lack of a sufficient number of dentists to care for them—how they can prevent mouth diseases by correct methods of personal hygiene analogous to those measures now enforced to some extent in the battle against other diseases in our large cities. This would include public lectures like those inaugurated in Brooklyn by our fellow-member, Dr. Thaddeus P. Hyatt, and also oral hygiene exhibits, school inspections and free dental service to the poor in institutions supported by the State or by philanthropy, like that in Boston, which, however, should be in charge of dentists well qualified to do the work, which is of a nature requiring a high order of technical skill and professional equipment, as well as executive ability, and should not be left to the tender mercies of what some have been pleased to call “dental nurses.”

In the light of the conception of prophylaxis here presented, it seems to your essayist that the phrase, “Clean teeth will not decay,” should continue to serve as the slogan of those who are studying and practising prophylaxis from the clinical and humanitarian, as well as the sociological and economic standpoints, in order to impress the laity, whom we desire to benefit with the truth, that clean teeth, in a normal, physiologically clean mouth, as part of a clean, healthy body, will not decay. This phrase has been characterized as a “catchy formula”; but I answer that if it serves to catch the eye and impress the mind of our great laboring and proletarian classes, and even of those higher up, with the fact that the use of the toothbrush and floss-silk, and the possession of sound teeth and a sweet breath are marks of respectability and civilizing influences second only to the use of soap and water, it will have sufficiently justified its existence and helped in the great work of disease prevention in which all true-minded dentists are engaged. It was intended for the layman, who is not particularly interested in the scientific aspect of the means used to save his teeth and health, provided such salvation be accomplished with a minimum of pain, expense and care on his part. It is admitted that this



formula, "Clean teeth will not decay," is true in the ideal sense. Then let us continue to make use of it until we have something better to take its place. An ideal is something to strive for, and only ceases to be an ideal when its object is attained; then a higher ideal still must be evolved from it if we wish to advance, since ideals are never static unless they are dead. This ideal regarding the teeth has the endorsement of many of the foremost workers in the field of public hygiene, and it has already helped to accomplish much in the present worldwide movement in this direction.

That this ideal may be closely approximated in practice, the following instance will show: During last winter Dr. Rodrigues Ottolengui delivered a public lecture under the auspices of this society, before the Brooklyn Institute of Arts and Sciences, in the course of which he cited a case of parents who had always suffered greatly from the effects of dental caries, and who determined that their children should escape such tortures if modern dentistry were capable of accomplishing it. In this case, heredity was all that could be desired as an argument to fall back upon had prophylaxis been unsuccessful, since both parents had defective teeth. They had, at this time, nine children, ranging in age from one to fourteen years, and until within a few months of the delivery of this lecture none of these children's teeth had ever shown a trace of dental disease. Results like this, remarkable as they now seem to us, would be attainable by every practitioner if dentists and parents would work together for the benefit of the child.

**Regarding
Prophylaxis
Technique.**

It would lengthen this paper beyond reasonable limits to review thoroughly the questions of instruments, methods and technique used in scaling and polishing the teeth, and other prophylactic procedures.

A learned professor of the exact science of mathematics once answered when I asked him why he made use of certain arbitrary factors in working out a problem in geometry: "Because it serves my purpose." In our prophylaxis work it matters not whether we use an orange-wood stick, primed with pure, finely powdered pumice, at the end of a handle, as some insist; or a soft rubber disk or even a brush loaded with a mixture of other detergents and revolving in the engine hand-piece, as advocated by others, when polishing the teeth; whether we use "push" or "pull" instruments to scale their roots; whether we believe in the so-called "local origin" or the "constitutional origin" of pyorrhea alveolaris; or, finally, whether all our piled-up lore and traditions regarding the use of antiseptics and detergents, from Lord Lister's epoch-making discoveries in 1867 to the present day, must give way before the latest author-



itative fiat that sterile water is all-sufficient—these things matter not in the final analysis, since equally good results are shown by workers on both sides of these questions; while the earnest practitioner, who is actually doing successful work in preserving the health of the mouth and preventing disease invasion, makes use of any or all of them at his pleasure, according to the requirements of the individual case.

**Individual
Prophylaxis.**

It is in its practical application to the individual case that prophylaxis in its widest signification as preventive medicine in the truest, broadest and best sense may be most beneficially and beneficently practiced. Individual prophylaxis includes all that is at present known of medical art, as applied to the prevention of disease and the prolongation of life. It renders life not only longer but happier, and offers a wide field for intelligent work. If properly carried out, an efficient system of individual prophylaxis would allow the living of a physiological life from conception to a physiological death, when the individual's stock of vital resistance became exhausted at an advanced age. As medical knowledge increases, and civilization advances, an ever nearer approximation to this physiologically ideal life should be attained by an ever increasing percentage of the population, with a corresponding increase in the average length of life; and the dentist, as the guardian of the portals of entry of all those things which are essential to sustain life, should be foremost in helping to bring about this desirable state of existence for mankind.

**Meaning of the
Dental Degree.**

It may perhaps be thought by some of my hearers that in outlining my views on the subject of prophylaxis, and including such a broad field of action as the legitimate one for the dentist, I have overstepped the boundaries of our profession, and have encroached upon the domain of the general physician. But it seems to me that the degrees of D.D.S., M.D.S., and D.M.D., imply that the holder thereof is possessed of all the knowledge required to properly care for the teeth and their adnexa, and, as Dr. Julio Endelmann has pointed out, he should be able to diagnose pathological states throughout the body, due to diseased conditions of the teeth and mouth, and to recognize and diagnose such general disorders as may predispose to or directly cause oral diseases. This conclusion is forced upon us in view of the present status of dentistry, and because of the broad interpretation given to the term dentist by authoritative dental and dento-legal writers.

Although one of our States now requires a medical degree also before admitting a man to practice dentistry, I maintain that, given a good



preliminary education as a foundation, the dentist who holds only the dental degree as the result of a regular course of three years of study, as now required by our leading dental schools, is as fully qualified to practice his specialty in the broadest acceptation of the term as a "physician of the mouth," as is the general practitioner to follow his calling under the M.D. degree—so excellent is now the training and instruction in the fundamental medico-dental subjects of anatomy, histology, chemistry, physiology, bacteriology and pathology given in those institutions, and so numerous are the opportunities for post-graduate study held out by them to the man ambitious for improvement in all phases of our work. The opportunities for professional culture were never before so numerous. I mean that culture which, as Dr. James Edward Power once said, "has for its one object the study of perfection," or, as Matthew Arnold puts it, that culture whose origin is in the love of perfection.

Guérini's "History of Dentistry" and the numerous instances of men who have been forces of inspiration in their professional lives, and who have passed away during the last few years, prove that the dental degree may symbolize a professional culture as high and complete as is that of any other calling; and if each of us would appreciate the fulness of the responsibility which rests upon us, and clearly recognize our duty in the field of preventive medicine, our profession would take a most important part in helping to bring about a realization of that wonderful "*Vision of the Future*" seen by Robert Ingersoll: "I see a race without disease of flesh, or brain, shapely and fair, the married harmony of form and function; and as I look, Life lengthens, Joy deepens, Love canopies the earth, and over all, in the great dome, shines the eternal star of Human Hope."

President's Address.

By FREDERICK S. MCKAY, D.D.S., Colorado Springs, Colo.

*Read before the Colorado State Dental Association—Twenty-fifth Annual Meeting
Boulder, Colo., June 29, 30, and July 1, 1911.*

I congratulate this Association this morning upon having reached the birthday rounding out its 25th year of organized activity.

Never did a presiding officer of this Association strike the opening gavel under more auspicious circumstances than this morning.

Never did our esteemed profession so shine with the clear, bright light of progress in its face as at the present time.



We are wont sometimes to look back at certain groups of men and say, "How grand it must have been to have lived in those days, for they were making history," but let us assure ourselves that at no time during the life of our profession has history in the making been more pronounced or active than at present.

It is indeed a question whether we fully realize the importance to future generations that lies in the era, in whose Eastern doorway we stand.

The value of men's services to-day are measured by the benefit which those services confer upon humanity, and surely the soul is ambitious that would attempt to measure the benefits that shall flow from the era we are ushering in.

It is indeed pathetic to think of the untold misery and suffering with which the human race has been afflicted all unnecessarily. It is pathetic to have seen men groping in darkness, perhaps cursing Nature for having decreed such suffering and death, when in truth Nature has ever been mindful of her offspring, has ever been eager and glad to respond, would men only conform themselves to her laws, beneficent and good.

By devious pathways throughout all these many dark years the way has led, until it is our privilege this happy morning to see the throng straight bound to the gate of Truth, whose portals are so large that from afar they can be seen, and whose way is so wide open that we wonder that men have been blind so long.

With something akin to emotion, I am led to state that never before did dental science offer such splendid prospect for service to humanity as at this present day.

Preventive Dentistry. The laws of Nature are thought to be elusive, and so they have seemed to be, but as our knowledge increases these laws are becoming proportionally

more simple and the lines more straight. As I see it, the highest conception of our calling has come to be "prevention," and in this respect I prefer to think of the present-day system as essentially a reform movement, and, like all reform movements, it consists in shearing the issue of all false knowledge and doctrine, simplifying all procedures and standing our feet squarely upon the bedrock of the fundamental right.

Who recognizes this concept of his professional life will find his name written large in the gratitude of humanity.

The time is coming fast, aye is already here, when the term "profession" carries a new and larger meaning, which is "duty."

More and more is the professional man looked upon as one speaking with authority, and that authority must be unquestioned.



One of our great missions is to teach, and in proportion as we can bring a message of help and cheer to humanity will our calling be dignified.

It is useless longer to delay the time when we shall step forward and deliver the message that human-kind is eagerly straining its ears to hear. This message must be that a large part of dental misery and mutilation is unnecessary and preventable, and we must show how its prevention is to be brought about.

If, in stating this grand truth, my words seem weak, let me ask you to listen to the words of another, whose burning enthusiasm cannot fail to impress. Dr. Hoff, in *The Dental Summary* for May, 1911, in speaking of this larger conception of dentistry, says:

"It is a great thing to be a dentist to-day, and the younger men coming into the profession now have not only a precious heritage of which to be proud, but they are surely to see the coming of the day which will place their occupation on a par with the grandest of all humanitarian callings. Nothing in our career for the past thirty years seems at all comparable with this discovery that it is practicable to eradicate all disease from the dental organs. I trust that it may not be that the public will discover this fact before the profession awakens to its opportunity. If we do not take advantage of our discovery and practically put it to the test, we shall deserve to lose the reward which ought to be incentive enough to compel a most cordial alliance with this new ideal."

With the activities of dental practice chiefly limited to the repair of damages already inflicted, or, as some one has termed it, "rescue work," it has seemed perhaps that the amount of such services demanded, and the number waiting to render them, was in inverse proportion, or, in other words, the supply of practitioners exceeded the calls. This has seemed a discouragement to the younger men.

There have been few greater fallacies.

The opportunity that exists to-day in dentistry is almost inconceivable. Leaders have told us that the amount of service really demanded makes the dental profession ridiculously inadequate in numbers.

Our activities must lie more in prevention, and the most valuable service we can render is in the teaching of oral hygiene for the prevention of dental disaster.

A distinguished member of our profession, writing in the *Dental Cosmos*, May, 1911, in speaking of the sources of irritation to the gum tissues, says: "The elimination of these sources of irritation to the gum tissues will prevent the great majority of destructive bone inflammations of the alveolar process, and incidentally double the work to be done for any clientele." Does this sound as though we had been doing our full duty?



To accomplish this reform is indeed an undertaking of no small magnitude.

Not only has the conception of what constitutes a proper condition of the oral cavity as the entrance of the nutritional canal been woefully deficient in the average individual, but the methods by which he can maintain proper hygiene have been extremely faulty. These points call for vigorous emphasis by the dental profession as applied to adults. They apply with equal emphasis to children, and often the parent must be taught first.

**Effects of
Food Habits in
Childhood.**

Without qualification I give first importance to hygiene as a measure affecting our young, but the almost universal prevalence of the beginnings of malocclusion in children is a subject of which I feel compelled to speak, because a greater professional activity is demanded to curb this tendency.

It is closely related to hygiene, inasmuch as the premature loss of temporary teeth is responsible for an extremely high percentage of malocclusion of the permanent teeth.

For a long time I have felt that the food habit of the growing child is, in the majority of instances, extremely faulty, and calls for a radical reform.

There is no doubt but that, in two instances which I shall name, a more intelligent supervision by us is called for.

The average child, following his own inclinations in food selection, consumes entirely too high a proportion of carbo-hydrate food, producing oral fermentation under faulty hygiene, and the resultant elaboration of lactic acid in contact with the teeth, producing the beginnings of enamel caries.

Secondly, that the "art of preparing food to-day almost eliminates the need of mastication, and except for the benefit derived from the mixing of our food with saliva, we might not, and many of us do not, masticate at all."

If this pernicious condition is in force during the period of natural growth and development of the jaws, there is an arrest of development that is bound to result in malocclusion, and hence a permanent impairment of masticating efficiency through life.

Huxley says: "The lower jaw is the most interesting bone in the body, for it is the first organ to show changes in the habit of the animal."

These points must be realized, and we can no longer excuse ourselves if we fail to give emphatic and intelligent instruction when the opportunity presents.

**Duty of the
Dentist.**

To co-operate fully in this ideal involves three distinct lines of procedure.

First: The dentist himself must present in his own person and in his family a faultless oral hygiene, which can be used as a personal demonstration.

Second: He must undertake an interested and intimate personal instruction of his entire clientele in measures calculated to produce and maintain oral hygiene. This phase is to be presented to us by one of our essayists, and I leave its elaboration to him.

Third: There is a public duty in the community and State, and our distinguished guest, Professor Dowd, is to point the way along this line.

These three phases are inseparable and imperative, and to carry to a logical and efficient conclusion the third of these aspects, I beg to suggest certain activities that I trust may be carried out by this Association.

**Dental Instruction
of Children in
Public Schools.**

The careful reader of our periodical dental literature must have noticed the uniformly high percentage of dental lesions existing among the public school children of the various communities that have been examined, and I am glad to note that earnest, though it seems unavailing, efforts have been made by the organized dentists of our State to reach and ameliorate these conditions, for it is certain, even though no formal examination has yet been undertaken, that conditions are fully as bad here as elsewhere reported. Enough has been seen as an incident to other examinations to assure us that conditions are not only serious but appalling. Realizing this fully, we yet feel that it is a very large question as to just what means should be employed to reach the problem. Without doubt the public school examination is the chief measure that we could undertake. What should logically follow such an examination is as yet an open question, but it is certain that to make this state-wide will require legislative action with all its uncertainties, and this cannot be accomplished for a very considerable length of time. What of the interim? What can we be doing as a society to lessen the frightful ravages that are steadily going on?

It has long seemed to me that the one most valuable way of spreading instruction is by the spoken word, well illustrated, right in the schoolroom, and to teachers and parents. It seems to me that a more intimate contact can be gained in that way than in any other, unless it be the actual educational value of a public clinic in operation. Such teaching, if given at all, should consist of fundamental standard knowledge, with personal opinion omitted so far as possible.

To that end, therefore, I suggest that this society prepare a lecture,



based upon such lines as I have indicated, to be accompanied by a well chosen set of lantern slides, with lantern, if necessary, and that this be sent from place to place throughout the State wherever called for, and presented before the public by members of this society.

In this way practically every town in the State that has the proper facilities could be reached, and we could feel that at least a start had been made.

As a supplement to this, a portable exhibit, somewhat similar to the tuberculosis exhibits with which we are all familiar, could be shipped over the State and arranged in schoolhouses for a given number of days until each school in a district had seen the exhibit and become familiar with its teaching. Such exhibits are manufactured now in standard form, or to order, and made to be folded and packed in a box that would involve small expense to ship.

Nothing, of course, in these recommendations should be so construed as to prevent the local societies from supplementing these plans in whatever way they may elect, while feeling at liberty to use the State exhibits to their fullest advantage. By these means it might be found that sentiment among School Boards, Civic organizations and the public at large had been aroused to such an extent that larger plans could more easily be brought to fulfilment when the actual conditions were better realized.

The foregoing is a matter affecting the vital statistics, and should be viewed in no other light.

**Reorganization
of National
Association.** There is in the hands of our Secretary a communication from the Committee on Reorganization of the National Dental Association, which will be presented at the proper time, and to which I ask your earnest attention.

It is to be hoped that the consummation of this long-talked-of plan, which would carry with it the establishment of a National dental journal, will be brought about at the coming meeting at Cleveland in July.

As I understand it, the plan provides for making each State society an integral part of the National body, and for making each local society a part of each State society. Such a plan meets my hearty approval, and I trust that resolutions may be adopted at this meeting which shall be forwarded to the National meeting, and which will put our society on record as favoring the proposed reorganization, according to this plan.

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As to the better organization of our own State, the rapid growth of the profession in Colorado during the past few years seems to warrant the assertion that there are localities which might well be included in the



SOCIETY PAPERS

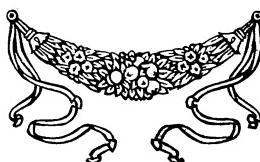
local organizations now existing, in such a way as to greatly increase their usefulness and influence, and at the same time add an element of strength to the State organization.

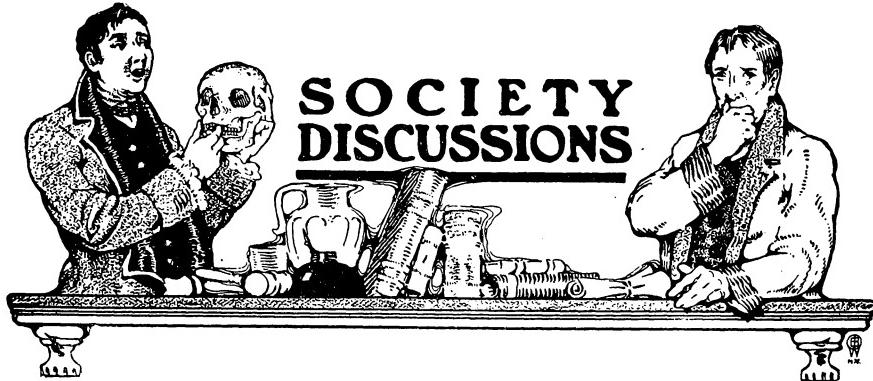
Our wisdom in asking little from the recent legislature has been justified. We asked for only an amendment to our dental law, providing that the fee for examination for license to practice in the State be raised from \$10 to \$25., and the society is to be congratulated in that this has been passed, and has been written into the Statute. I wish to extend our thanks particularly to the committee who had this matter in charge.

Consequently, our Board has been strengthened in their efforts to enforce the law, and we can undertake further changes when conditions seem favorable.

In conclusion, my thanks are extended to all committees and officers for efficient co-operation in the work of the year, and we feel a justifiable pride in the program, which is now in your hands.

It has been our ambition that this meeting should mark an era in the life of this Association, and this will be accomplished if the suggestions which we make to you are carried out in the same spirit of enthusiasm for a greater efficiency with which they are offered.





SOCIETY DISCUSSIONS

Colorado State Dental Society—Twenty-fifth Annual Meeting. Discussion of President's Address.

Dr. J. C. Williams, Mr. President, Members of the Colorado State Dental Society: It would seem to me that our president is to be congratulated on his address, and

it would seem that the Colorado State Dental Society has a very busy number of years before it. In reference to the suggestions, there are so many that are good that it is a hard matter to know just where to begin. We are all interested in oral hygiene, and we see in every direction a way for preventive instead of curative methods of handling the diseases which mankind is heir to, but we, as dentists, are especially interested in the oral cavity. As individuals and societies, we have been very busy during the last year discussing ways and means of getting this problem before us. Other societies have accomplished much. Clinics have been started, school children's teeth charted, true conditions found, experimental classes formed, instructive lectures and exhibits given, and a general plan toward educating the people carried out, all of which have made a great start toward establishing oral hygiene on a firm footing.

Oral Hygiene. Now it seems to me that our president's recommendation to this society of starting our oral hygiene project as a State society is one of the best that I have heard. Regarding getting laws through the Legislature, it will be two years before we can do that, and in the meantime, by adopting this plan, we could start a general plan of education and educate the public throughout the State, which is one of the first things that we



SOCIETY DISCUSSIONS

need to do in oral hygiene. Oral hygiene is not confined to any community or State or nation. It is world spread, and we, as a society, have a great part to play in this movement. We have much to do as a society in an educational way. As individual dentists we do not impress our patients with the great need of oral hygiene, and to accomplish the greatest good to the greatest number I believe that in the end we will need to have State recognition and sanction; that as a State society we should take proper steps to have these laws introduced at our next Legislature. We should have the recommendation of our State Boards of Health. We have not the proper understanding with the medical profession. As dentists, we do not attend the medical meetings as often as we should, yet we are entirely welcome there. We should get in touch with the physicians. We should have the approval of the State Educational Department, and by such means we will obtain a standing with all school boards, and the superintendents and teachers, thereby helping our cause. And these are only a few of the many suggestions which we could take up and work out, and I hope the society will do this. I hope that a committee will be appointed to formulate plans for a general State oral hygiene movement, so that we may all work in harmony and unison.

The society was indeed successful in getting the

Reorganization. recent law passed through the Legislature. In order to do all our work in this State, and do it for the best good of all, it would seem to me that the suggestion of the reorganization of the State society coming at this time, with the plan of the reorganization of the National, is a fitting movement to start in this society. We have in the State of Colorado something like 480 dentists. There are nearly 300 dentists outside of Denver, and it seems to me that some plan of reorganization along the lines of our Eastern States, Iowa and Illinois, whereby sections of the State are organized into societies and component societies of these State societies would be advantageous. Now, our dentists in the northern part of the State only meet when they meet at our yearly meeting, and it seems to me that there could be at least two or three profitable societies formed from the northern boundary of the State to Denver, and taking in Denver and going on further south, Colorado Springs and Pueblo, and possibly one or two over the divide, and in this way, and in this way only, can we work in harmony and unity and keep up our enthusiasm. It has been proven in all States that have adopted this plan that they have increased their membership. I originally came from Iowa, and I can remember before the reorganization of the Iowa State Society, that Iowa had something like seven or eight hundred dentists at that time, and if we could get a hundred out to our State meetings it was a big meeting. They adopted this plan of reorganiza-



tion, taking the city societies and making them component parts of the State Society, and in the meeting in May their membership was seven hundred and fifty, and there were over four hundred dentists at the meeting. Illinois shows the same result; they have increased their membership. They have good rousing meetings, and by this method we can keep up enthusiasm. This will be a help to us, all working together, the component societies working in their districts, when we desire to have laws put through the legislature. We have the component societies to work on the representatives and senators from their districts, and in that way we will be enabled to accomplish something. I hope that this society will take some action, and that a committee will be appointed to formulate a reorganization plan.

Our President has laid out work that will keep

Dr. T. C. Brownlie. us all busy and if we take on but a small part of his optimism we will bring success to the movements advocated. Too many of us have not taken the oral hygiene movement seriously and we are not fully awake to our opportunities. When I took up dentistry I thought it was only necessary to know how to treat teeth and restore lost parts. The pyorrhea cases that presented I thought were due to past neglect and took little responsibility to myself. It worried me little compared to my anxiety over abscessed teeth and difficult restorations. Once a year was thought to be often enough to remove tartar and examine the teeth. I often spent an hour or more scaling and felt certain that my patients would not develop pyorrhea.

Gentlemen, I had no conception of what was before me. There must be a reform and it must come all along the line. We as dentists are not awake to the possibilities, the people are not awake to them—but there must be a realization, and it is coming to all of us, I fear many times, with regrets.

Nothing has discouraged me more than the flood of pyorrhea and gingivitis that pours into the office. The patients are generally people who have given their mouths attention above the average and are desirous of good service. You talk long and earnestly to intelligent people about the need of constant care of their own and their families' mouths, and the interest that they take assures you each time that they will be one of your faithful families. But so many put off returning until driven by necessity. When they do you find in addition to excessive restoration, gingivitis, which means more trouble and so much more time to treat.

**Specialists in
Prophylaxis
Needed.**

You try to care for the people properly, but if you do the ordinary operations on the teeth you do not have sufficient time to give to prophylaxis and pyorrhea. I have always tried to impress the patient



SOCIETY DISCUSSIONS

with the fact that the latter treatment was of greater importance than the filling operations.

Few men can do justice to their patients in both fields. If you are busy with general operative work, you are liable to neglect the prophylactic. In any large practice I believe that fully half the time could and should be given to oral hygiene measures. The solution of this problem has given me more concern during the past year than everything else in my practice.

We have learned how to scientifically and practically treat that old bug-bear—putrescence; we do not exhaust the nervous energy of our patients and ourselves packing large foil gold fillings, and we know that our contacts on proximal inlays are correct before they are cemented to place, but in prophylaxis and pyorrhea the same old cases are with us always, taking more and more time and causing us more and more concern.

There should be a dozen men in Denver giving all their time to prophylaxis; a hundred could not do all the work that should be done. We need more men with that irresistible energy and optimism of our president to forge ahead. Too many of us are either too busy with our every-day routine, or have fallen into an innocuous condition, so that we are of little or no help in these progressive movements. Young men taking up dentistry in the future must be stimulated, the school children and younger generation must be interested to accomplish the great good that must come from the movement.

In Denver we see few cases of mottled enamel, and these generally come from the known regions of susceptibility, but I feel that it is a serious problem, and that a failure to solve it is a blot upon the fair name of the profession.

Let us lend our aid, both financial and otherwise, to determine the cause of brown stains in the teeth of such a large percentage of children native to certain localities in Colorado.

Mr. President, I have not very much to say on
Dr. James. this subject, except on the reorganization idea and the educational idea. We in Illinois have brought this about and very satisfactorily increased the membership of the society. I think we have over eleven hundred members in our State Society. All the city local societies are working in connection with the State Society, and as a matter of public education they are working with the public press. The public press have agreed, in fact, they were very glad, to take articles that are written by dentists, and publish them all over the State—all of the prominent papers throughout the State having agreed to publish them at the same time. These are articles that are being written, and



are being furnished to the press. And it is simply a matter of education on different subjects that we think the public ought to know about. The public press are glad to have these articles.

Mr. President, I would like to say that Dr.

Dr. Howell. Warner of Illinois, who by the way is a brother of

Dr. Eugene Warner of Denver, is at the head of that publication, or committee, and that all other States can get this advertising matter by paying a dollar and a half. For instance we will take Fort Collins; if the dentists there will send their names, each one send his dollar and a half a year, he can get all this advertising matter, which is gotten out by the National Publication Association, or through the publication association, so that it can be printed in any State in the United States, and thereby educate any one community up to the standards of good dentistry, and they are only too glad to make this arrangement with the public press in each and every State or each and every community. Thus any dentists here in the State could get together, say at Colorado Springs or Fort Collins or Denver, or in any other community, and make arrangements for each and every dentist in that community or the majority of the dentists, and they can have this printing matter run through the daily papers regularly, so many articles a month or week, as the regular publication bureau of Illinois have arranged for. I understand that some of the members in this State, in the smaller towns, have taken advantage of that, and have subscribed their dollar and a half, and every so often there will be advertising matter come out as news articles in the press of the town. It will be bread cast upon the waters, that will return many times. I suggest that before this meeting adjourns, we take some action as a body to correspond with Dr. Warner and make arrangements for helping to educate the public in our own way by contributing the dollar and a half. All we have to do is contribute the dollar and a half to the Illinois Publication Association, by the Illinois State Dental Society, and they will look after that for us, through the newspaper associations of the United States.

There is an objection to the word "advertising" in connection with this arrangement. It is not the meaning, of course; that is all right, but the

word is bad.

Dr. Howell. I object to the objection. We do advertise, and this is advertising, but it is ethical advertising.

I wish to have the good brother to draw the distinction between ethical advertising and quack advertising. This is ethical and it is advertising. It is the correct word. It is advertising,



SOCIETY DISCUSSIONS

and I stick to the word. "A rose by any other name would smell as sweet," and this is advertising, and we pay for it, and we reap the benefit and reward, but it is ethical.

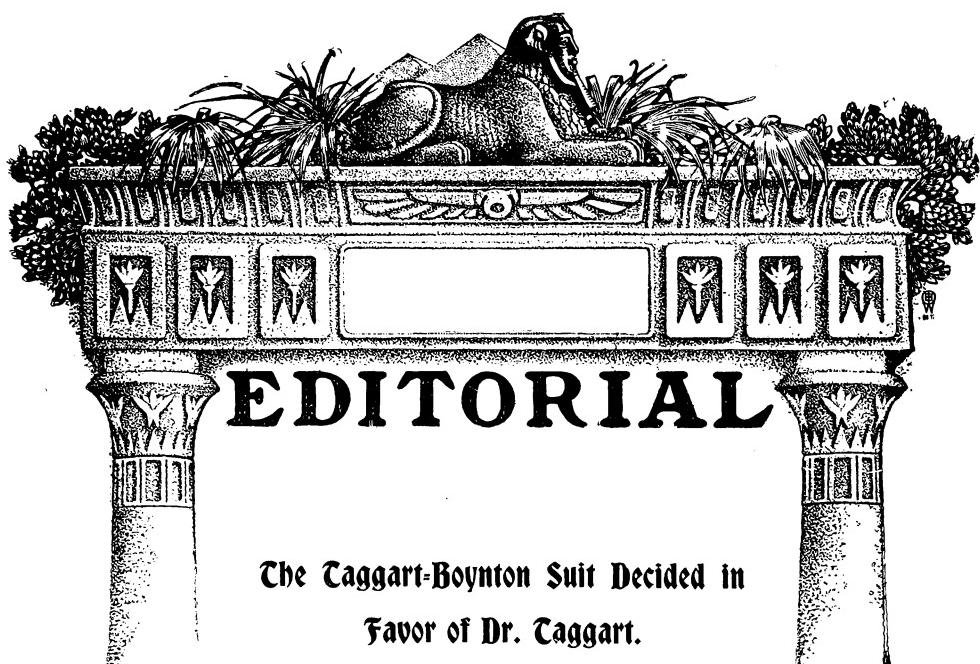
Dr. McGee. I would like to suggest also that a rotten egg by any other name stinks just as bad.

Dr. Adams. Mr. President, a rose may smell just as sweet under any other name, and an egg may stink just as bad, but such discussion is not getting results. I do not care whether it is advertising or publicity, or what it may be called. The people do not know much about oral sanitation, and they should know. The reason why they do not know is because the dentists of the country haven't taught them. That is our business. It is our duty to teach them, or to see that they are taught. It seems that we are not drifting very far in this discussion. We are not arriving at conclusions and getting action, and it occurs to me that it is not out of place at this time that a committee be appointed to recommend some action on that phase of the president's address. I move, Mr. President, that such a committee be appointed.

(The motion was seconded, and being voted upon was unanimously carried.)

Dr. McKay. It devolves upon me, I think, to close. I don't know that I have very much to say. The press publicity probably is a good idea, no matter what we call it, under the plan that is being worked out by Dr. Warner of Illinois. I think we have had some communications, perhaps something I have seen in some of the journals called my attention to that, and it probably can be taken up in due time. It would come under the province of the committee which has been ordered. I will ask Dr. Varley, Dr. Williams and Dr. Finn if they will serve on that committee.





The Taggart-Boynton Suit Decided in Favor of Dr. Taggart.

Elsewhere in this issue will be found a copy of the decision of the court declaring the Taggart patent valid, and, by a strange coincidence, in this same number we present to our readers a copy of a bill just introduced in Congress by Senator Lodge, which, if passed, will prohibit the granting of process patents in relation to dental practice. Next the writer desires to state, in the most emphatic terms, that the decision of the court in the Taggart-Boynton suit, and the introduction of this bill by Senator Lodge, both have his unqualified approval and support. The writer also very well understands, that by some this will be considered as inconsistent, but the truth is that those who do so think, simply do not very well understand several things. They do not understand, in the first place, just what was the purport of the original patent bill, introduced several years ago, which was practically similar to the new Lodge bill. Second, and more particularly, they do not understand, and never did understand, the Taggart patent. One might well ask why? and the answer is that the majority of men seem to form opinions from what others tell them, rather than by informing themselves. The answer is that the



great majority of the dental profession have been misinformed and misled in regard to the Taggart patents, and in regard to Dr. Taggart's intentions. Certain men have freely prophesied the dire things which Dr. Taggart would undertake against the profession in case he should win this suit. These prophesies were absolutely false when made, but now that Dr. Taggart has won this suit, after years of expensive litigation unnecessarily forced upon him, should any of these prophesies occur, the dental profession may extend thanks to those prophets who have so grievously harried Dr. Taggart, and who have so grossly misled the dental profession of this country and of the world.

The Misleaders and Their Misleading.

The first blunder was made when a circular letter was sent out inviting dentists to contribute to a fund to be used in defending a suit brought by Dr. Taggart against Dr. Boynton. Had Dr. Boynton been properly advised at that time he would have expressed a willingness to permit this suit to go against him by default. By such action the manufacturers of infringing casting machines would have been forced into the courts to defend their interests with their own money, instead of which we have seen the money of the contributing dentists wasted in a useless litigation; a worse than useless litigation, since the only result has been the alienation of a great body of the profession from Dr. Taggart, *the one man in the entire dental world to whom the profession should have looked, and even now must look for the solution of those problems in the art of casting, which still remain to be mastered.* In proof of this assertion it needs only to be stated that in the years that have passed since Taggart first announced this wonderful process, not one single step forward in the art has been made except by Taggart himself. There have been many imitators, and many experimenters, and much scientific investigation, but at this very hour the best casting machine, the best wax, and the best investment, as well as the best appliances for using the necessary materials, have all come to us from Taggart. And there are yet other things that Taggart could, and would, give to us, if the profession would but follow him and his teachings; would but give him their appreciation and support, and stop running after false prophets.

It is only a few weeks ago when public announcement was made in



ITEMS OF INTEREST

some of the journals that Dr. Taggart had lost this suit, when, in truth, the case had only been dismissed on a technicality, of which the defendant's lawyers must have been fully cognizant. And even after the suit was replaced on the calendar, and after it had been heard, it was confidently boasted in a hotel dining-room in Washington, that it was certain that Dr. Taggart would lose. Thus little did the defendants comprehend the Taggart patent even after Taggart's lawyers had made it plain in an illuminating brief, which one even not a lawyer had but to hear or read, to know how absolutely ridiculous had been all the evidence brought forward to break down the patent. Yet such men pose as leaders. They are, in truth, but misleaders.

Let just one more example of this misleading be given. Is it not a fact that the dental world has been led to believe that Taggart's patent depended upon the idea of making a pattern of wax; surrounding this with an investment; melting the wax, thus forming a mould which could only be entered through a sprue hole, and the casting of molten metal into this hole? Has it not been pointed out hundreds of times that this method is a century old? That it is known in the arts as the "Lost Wax" method? Have we not been reminded time and time again that the Italian jeweler, Cellini, antedated Taggart? Have we not been told that others before Cellini took leaves, flowers, lizards and other small animals, invested them, and, after destroying them by heat, reproduced them by casting metal? Did not one industrious researcher delve in the libraries and finally compile a lengthy article, which was duly published in a prominent dental journal, in which he gave a full account of the many and various persons who, during the last century or two had practiced this "lost pattern" method in one form or another? And from this did he not draw the deduction that the profession was free to use Taggart's process? Would he have wasted all that time, ink and gray matter if he had not been led to believe that this indeed was the crux of the situation, the one essential feature of Taggart's patent?

Now what must the profession think when told that nowhere in Taggart's patent does he claim to have invented the lost wax method? That in no sense does the validity of his patent depend upon this old, old way of casting? They can but think one thing, that they have been misled.



There is another false notion that has been industriously disseminated by those that have vainly sought some palliating excuse for using that which was not, and certainly now is not, theirs; and that is that a patent is of no import until its validity has been tested in court. All those who have thought this, have listened cheerily to the whispered statement, wafted hither and yon, to the effect that, "We have Taggart beaten." But now that Taggart has won, it must be a sorry realization to these gentlemen, however ethical they be, that they have been infringing Taggart's patent. That in the eyes of the law they are liable in damages. Indeed the more truly ethical these gentlemen be, the more sorry, because, of course, they will at once seek to repay Taggart in some manner for the damage they have done him, by purchasing and using infringing machines. No ethical gentleman could do less.

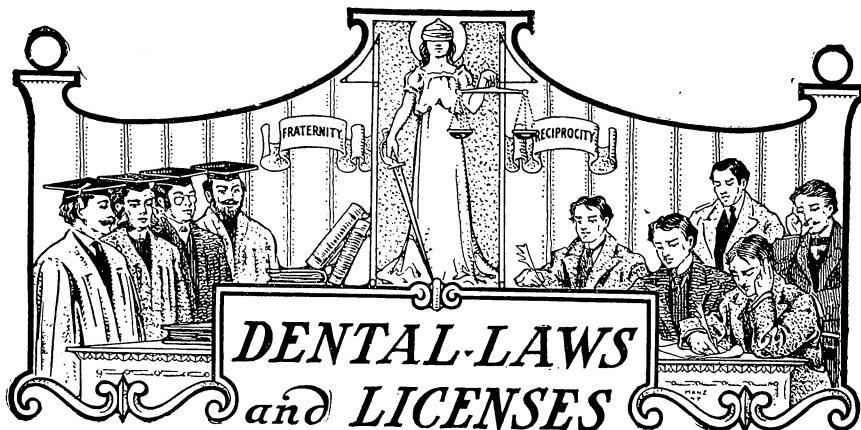
Duty of
The Defense
Committee.

In the present situation, what is the manifest duty of those who have precipitated this situation? First, having induced Dr. Boynton to litigate this case, they must reimburse him for any pecuniary loss

that may now accrue to him, through the loss of the suit. Also they must find the means wherewith to appeal the case to the higher court. They have been telling us for months that they would win this suit. They have lost it in the first court, but this decision may be reversed in a higher court. It is due the profession, therefore, from these gentlemen who have undertaken the conduct of this case, that a final decision should be sought. This is likewise due to Dr. Taggart. Being best for all parties, it is to be hoped that this course will be pursued.

In the meanwhile, what is the duty of the profession? Men can no longer declare the patent inoperative, and themselves free to use the process until the patent be proven valid. In the present state of the case the patent is valid, and has been so pronounced in a court of law. The profession, therefore, should either abandon the process, or practice it with the Taggart machine. There should be no middle course.





DENTAL LAWS and LICENSES

Decision in Taggart-Boynton Suit.

SUPREME COURT OF THE DISTRICT OF COLUMBIA

WILLIAM H. TAGGART }
v. } In Equity.
GEORGE W. BOYNTON } No. 27927.

DECREE

This cause having come on to be heard on the pleadings and proofs, and the court having heard the argument of RUSSELL WILES, Esq., and FRANCIS M. PHELPS, Esq., on behalf of the plaintiff, and of E. T. FENWICK, Esq., and L. L. MORRILL, Esq., on behalf of defendant, and being fully advised in the premises finds as follows:

1. WILLIAM H. TAGGART, the plaintiff herein, is the owner of Letters Patent of the United States No. 872,978, for a Method for Making Molds for Dental Inlays and the Like.

2. Said Taggart was the first, sole and original inventor of said method, and said method involves patentable invention over the prior art. It was not known or used by others before plaintiff's invention thereof, nor more than two years prior to January 12, 1907, and the defences of prior knowledge and use, and of public use, more than two years before the filing of the application, are not established and are overruled.

3. Letters Patent of the United States No. 872,978 are therefore good and valid in law as to each claim thereof.

4. Defendant, Dr. Geo. W. Boynton, has infringed said patent by practising the process thereof in the District of Columbia since the grant of the patent and prior to the filing of the bill herein.



5. Plaintiff has not prayed for damages in his bill, and has limited his prayer to that for an injunction and general relief.

IT IS THEREFORE ORDERED, ADJUDGED AND DECREED that defendant, GEORGE W. BOYNTON, his agents, servants, attorneys, and workmen, be, and hereby are, enjoined from further infringing said patent, and from further practising the method thereof, or any material or substantial part thereof, and that a writ of injunction to this effect issue out of this court.

FURTHER ORDERED that defendant pay the costs of this suit to be taxed by the clerk and plaintiff have execution therefor.

(Signed) HARRY M. CLABAUGH,
Chief Justice.

Approved as to form

FRANCIS M. PHELPS,
DYRENFORTH, LEE, CHRITTON & WILES,
Of Counsel for Plaintiff.

EDWIN T. FENWICK,
Of Counsel for Defendant.

A TRUE COPY

TEST:

J. R. YOUNG, Clerk,
By F. E. CUNNINGHAM.
Asst. Clerk.

(SEAL)

Lodge Bill to Prohibit Process Patents in Dental Practice.

62D CONGRESS, 2D SESSION—S. 5177.

IN THE SENATE OF THE UNITED STATES.

FEBRUARY 8, 1912.

Mr. Lodge introduced the following bill, which was read twice and referred to the Committee on Patents.

A BILL

Amending the statutes relating to patents, relieving medical and dental practitioners from unjust burdens imposed by patentees holding patents covering methods and devices for treating human diseases, ailments, and disabilities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section forty-eight hundred and eighty-six of the Revised Statutes be, and the same is hereby amended by adding thereto the following paragraph:

“But no patent shall be granted upon any art of treating human disease, or ailment, or disability, or upon any device adapted to be used in the



treatment of human disease or disability, or attached to the human body and used as a substitute for any lost part thereof, or upon any art of making such device, unless such device is adapted to be put on the market and sold," so that such section shall read as follows:

"Section 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof, or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law and other due proceeding had, obtain a patent therefor.

"But no patent shall be granted upon any art of treating human disease, or ailment, or disability, or upon any device adapted to be used in the treatment of human disease or disability, or attached to the human body and used as a substitute for any lost part thereof, or upon any art of making such device, unless such device is adapted to be put on the market and sold."

Section 2. That section forty-nine hundred and twenty-one of the Revised Statutes be, and the same hereby is, amended by adding thereto the following paragraph:

"Nor shall any suit or action be maintained for the infringement of any patent for an art of treating human disease, or ailment, or disability, or for any patent for any device adapted to be used in the treatment of human disability, ailment, or disease, or attached to the human body and used as a substitute for a lost part thereof, or an art of making such device, unless it appears that such device can be made and put on the market," so that said section shall read as follows:

"Section 4921. That the several courts vested with jurisdiction of cases arising under the patent laws shall have power to grant injunctions according to the course and principles of courts of equity to prevent the violation of any right secured by patent, on such terms as the court may deem reasonable; and upon a decree being rendered in any such case for an infringement the complainant shall be entitled to recover, in addition to the profits to be accounted for by the defendant, the damages the complainant has sustained thereby, and the court shall assess the same, or cause the same to be assessed, under its direction. And the court shall have the same power to increase such damages, in its discretion, as is given to increase the damages found by verdicts in actions in the nature of actions of trespass upon the case.

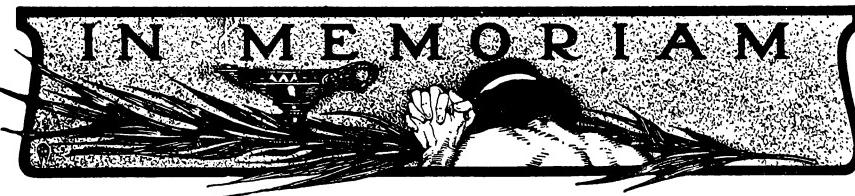


"But in any suit or action brought for the infringement of any patent there shall be no recovery of profits or damages for any infringement committed more than six years before the filing of the bill of complaints, or the issuing of the writ in such suit or action, and this provision shall apply to existing causes of action.

"Nor shall any suit or action be maintained for the infringement of any patent for an art of treating human disease, or ailment, or disability, or for any patent for any device adapted to be used in the treatment of human disability, ailment, or disease, or attached to the human body and used as a substitute for a lost part thereof, or an art of making such device, unless it appears that such device can be made and put on the market."

Section 3. That this Act shall take effect immediately upon its passage, but the paragraph added to section forty-eight hundred and eighty-six shall not be held to apply to any application for patent filed prior to the passage hereof, nor to patents granted upon applications filed prior to said date; nor shall the amendment to section forty-nine hundred and twenty-one affect the rights of action that may have accrued prior to the passage hereof.





Dr. J. C. Corcoran.

On December 11, 1911, occurred the death of Dr. J. C. Corcoran, one of the foremost men of our profession in the State. He was born in 1863, in Corcoran, Minn., a town named after his father, graduated from the Ohio Dental College with honor, in 1886, and has since been considered one of our best operators. His loss is felt keenly by the profession, and the following resolutions have been drawn up by the Minnesota State Dental Association in appreciation of him:

"IN MEMORIAM" RESOLUTIONS

WHEREAS, It has pleased Almighty God in his providence to remove from our midst and from this earth our esteemed brother, Dr. J. C. Corcoran, who departed this life December 11, 1911, and

WHEREAS, By his death the commonwealth has lost a citizen of the highest type, and the profession an eminent and highly respected member, who, throughout his career, was ever among the foremost working for the advancement of his fellowman, and

WHEREAS, By his death the Minnesota State Dental Association has sustained an irreparable loss, therefore be it

Resolved, That we, the Minnesota State Dental Association, feeling the loss we have sustained keenly, hereby express our sorrow over the sudden culmination of Dr. J. C. Corcoran's noble career, and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of this association, and a copy be sent to the bereaved family and to the journals for publication.

F. J. YERKE,
G. F. ANDREWS,
J. M. WALLS,
Committee.



SOCIETY ANNOUNCEMENTS



National Society Meetings.

NATIONAL DENTAL ASSOCIATION, Washington, D. C., September 10, 11, 12, 13, 1912. Secretary, Dr. Homer C. Brown, 185 E. State St., Columbus, O.

CANADIAN DENTAL SOCIETY AND ONTARIO DENTAL ASSOCIATION, union meeting, Hamilton, Ont., June 3, 4, 5, 6, 1912. Secretary, J. A.

Cameron Hoggan, Federal Bldg., Hamilton, Canada.

AMERICAN SOCIETY OF ORTHODONTISTS, Chicago, Ill., July, 1912.
Secretary, Dr. F. C. Kemple, 576 Fifth Ave., New York.

State Society Meetings.

ALABAMA DENTAL ASSOCIATION, Tuscaloosa, Ala., May 14, 1912.
Secretary, G. F. Petrey, Flora, Ala.

ARKANSAS STATE DENTAL ASSOCIATION, Little Rock, Ark.
Secretary, Dr. I. M. Sternberg, Fort Smith, Ark.

ARIZONA DENTAL SOCIETY.
Secretary, Dr. H. H. Wilson, Phoenix, Ariz.

CONNECTICUT STATE DENTAL ASSOCIATION, Bridgeport, Conn., Apr. 16, 17, 1912.
Secretary, Dr. Arthur V. Prentis, New London, Conn.

GEORGIA STATE DENTAL SOCIETY, Americus, Ga., June 11, 1912.
Secretary, Dr. DeLos H. Hill, Prudential Bldg., Atlanta, Ga.

IDAHO STATE DENTAL SOCIETY, Idaho Falls, Ia., June, 1912.
Secretary, H. F. Kimball, Salmon, Ia.

ILLINOIS STATE DENTAL SOCIETY, Springfield, Ill., May 14-17, 1912.
Secretary, Dr. J. F. F. Waltz, Decatur, Ill.

INDIANA STATE DENTAL ASSOCIATION, Indianapolis, Ind., May 21, 22, 23, 1912.
Secretary, Dr. Otto U. King, Huntington, Ind.



KENTUCKY STATE DENTAL ASSOCIATION, Louisville, Ky., May 27, 28, 29, 1912.

Secretary, W. M. Randall, Louisville, Ky.

MAINE DENTAL SOCIETY, Bar Harbor, Me., June 26, 27, 28, 1912.

Secretary, I. E. Pendleton, Lewiston, Me.

MICHIGAN STATE DENTAL SOCIETY, Detroit, Mich., April 11, 12, 13, 1912.

Secretary, Dr. Marcus L. Ward, Ann Arbor, Mich.

MINNESOTA STATE DENTAL ASSOCIATION, St. Paul, Minn., June 14, 15, 1912.

Secretary, Benjamin Sandy, New Syndicate Bldg., Minneapolis, Minn.

MISSISSIPPI STATE DENTAL SOCIETY, Gulfport, Miss., June 4, 5, 6, 1912.

Secretary, L. B. PRICE, Corinth, Miss.

MISSOURI STATE DENTAL ASSOCIATION, Kansas City, Mo., April 16, 17, 1912.

Secretary, Dr. S. C. A. Rubey, Clinton, Mo.

NEBRASKA STATE DENTAL SOCIETY, Lincoln, Neb., May 21, 22, 23, 1912.

Secretary, Dr. J. H. Wallace, Omaha, Neb.

NEW HAMPSHIRE DENTAL SOCIETY, Weirs, N. H.

Secretary, F. F. Fisher, Manchester, N. H.

NEW YORK STATE DENTAL SOCIETY, Albany, N. Y., May 9, 10, 11, 1912.

Secretary, Dr. A. P. Burkhardt, 52 Genesee St., Auburn, N. Y.

NORTH CAROLINA DENTAL SOCIETY, Raleigh, N. C.

President, Dr. Phin. Horton, Winston-Salem, N. C.

NORTH DAKOTA DENTAL ASSOCIATION, Grand Forks, N. D., May 14, 15, 1912.

Secretary, Dr. E. N. Hegg, Hatton, N. D.

PENNSYLVANIA STATE DENTAL SOCIETY, Pittsburgh, Pa.

Secretary, Dr. Luther M. Weaver, 7103 Woodland Ave., Philadelphia, Pa.

SOUTH CAROLINA STATE DENTAL ASSOCIATION, Isle of Palms, Charles, S. C.

Secretary, Dr. W. B. Simmons, Piedmont, S. C.

SOUTH DAKOTA DENTAL SOCIETY, Sioux Falls, May 14, 15, 1912.

Secretary, J. D. Donahoe, Sioux Falls, S. Dak.

TEXAS STATE DENTAL ASSOCIATION, Abilene, Texas, May 2, 3, 4, 1912.

Secretary, Dr. J. G. Fife, Dallas, Texas.

UTAH STATE DENTAL SOCIETY, Ogden, Utah, June, 1912.

Secretary, Dr. W. G. Dalrymple, 2421 Washington Ave., Ogden, Utah.



VIRGINIA STATE DENTAL ASSOCIATION, Old Point Comfort, Va., July 9, 10, 11, 1912.

Secretary, Dr. W. H. Pearson, Hampton, Va.

WASHINGTON STATE DENTAL SOCIETY, Spokane, Wash., June, 1912.

Secretary, Dr. F. B. Lynott, 249 Peyton Blk., Spokane, Wash.

WEST VIRGINIA STATE DENTAL SOCIETY, Webster Springs, Va., Aug. 14, 1912.

Secretary, Dr. Frank L. Wright, Wheeling, W. Va.

WISCONSIN STATE DENTAL SOCIETY, Oshkosh, Wis., July 9, 10, 11, 1912.

Secretary, Dr. O. G. Krause, Wells Bldg., Milwaukee, Wis.

Oklahoma State Dental Society.

At the last meeting of the Oklahoma State Dental Association, the President, B. L. Shobe, outlined a plan for making the meeting of 1912 a Post-Graduate Course, and a committee was appointed to carry out his plans. The committee has secured the services of the following distinguished men to come to Oklahoma City and conduct the course.

Drs. J. P. Buckley, Ph.G., D.D.S., Professor and head of the Department of Materia Medica, Pharmacology, and Therapeutics, of the Chicago College of Dental Surgery; Hart J. Goslee, B.S., D.D.S., Professor of Prosthetic Dentistry, Crown and Bridge Work, of the same college, and G. Walter Dittmar, D.D.S., Professor of Operative Dentistry of the Dental Department of the University of Illinois.

These men need no introduction to the dentists of this or any other country, for they are the equals of any teachers or authors in the world. We are glad to be able to offer such men as these to the dentists of Oklahoma and surrounding States.

This course is intended to be practical, and will give the practical dentist just the course he has been longing for, and at a price that all can afford to pay.

We desire that it shall not cost over \$5, including Post-Graduate Certificate, and if we can get as many as two hundred we think that this will be ample to charge, and this same \$5 will make all ethical dentists members of the State Association, and all arrearages of any amount will be credited, and each one can start in fully paid up. The charge to out-of-State practitioners will be the same as to residents.

No examination will be required to enter, and you will receive a week's course, which will be divided into lectures, practical demonstrations of same and clinics.

The course will begin March 25th, and continue a week.



If you are interested and wish to attend, send your remittance of \$5 immediately to Dr. B. L. Shobe, Bartlesville, Okla. He will enrol you and acknowledge receipt of your remittance.

The time is short, the number will have to be limited, so it will be decidedly better for all those outside of the State to get enrolled early as possible.

A. L. WALTERS, Secretary.

Connecticut State Dental Association.

The forty-eighth annual convention of the Connecticut State Dental Association will be held in "The Stratfield," at Bridgeport, April 16 and 17, 1912.

A. V. PRENTIS, Secretary.

New London, Conn.

Southwestern Nebraska Dental Society.

The next meeting of the Southwestern Nebraska Dental Society will be held at Alma, Neb., March 14, 1912. Election of officers will be held at that time also; several other important matters are to come before the society. A good program is promised by the Executive Committee.

W. A. McHENRY, Secretary.

Nelson, Neb.

Massachusetts Board of Registration in Dentistry.

A meeting of the Massachusetts Board of Registration in Dentistry, for the examination of candidates, will be held in Boston, Mass., March 6, 7, 8, 1912.

For application blanks and further information, apply to

DR. G. E. MITCHELL, Secretary.

14 Water Street, Haverhill, Mass.

Minneapolis Dental Society—Annual Clinic.

The Minneapolis Dental Society will have a two-day meeting March 22d and 23d. The program for the first day will be extensive chair and table clinics, and a lantern slide lecture in the evening. The second day's program will be devoted entirely to clinics by professional talent from out of the city.



An extensive manufacturers' exhibit will be held in the same hall on both days.

Any further information regarding this meeting may be obtained from

O. DEFOREST DAVIS, Secretary.

Donaldson Bldg., Minneapolis, Minn.

Texas State Dental Association.

The thirty-second annual meeting of the Texas State Dental Association will be held at Abilene, Texas, May 2, 3 and 4, 1912. Exhibitors desiring space will please address Dr. C. M. McCauley, Abilene, Texas. The clinics will be in charge of Dr. J. O. Hall, Waco, Texas, who will furnish any information relative to same.

All ethical practitioners are cordially invited to attend the meeting, and will be cheerfully furnished any other information by the secretary.

H. M. DAVISON, President,
Hubbard, Texas.

J. G. FIFE, Secretary,
736 Wilson Bldg., Dallas, Texas.

Texas State Board of Dental Examiners.

The next meeting of the Texas State Board of Dental Examiners, for the purpose of examining applicants for a license to practice dentistry and dental surgery in the State of Texas, will be held in Houston, Texas, beginning June 10, 1912, at 9 A. M.

For application blanks and any further information, address

J. M. MURPHY, Secretary.
Temple, Texas.

Indiana State Dental Association.

The Indiana State Dental Association will hold its 54th annual meeting at Indianapolis, May 21, 22, 23, 1912, at the Claypool Hotel.

W. W. Shryock, Supervisor of Clinics, promises the greatest clinic ever held in the State. W. E. Kennedy, Executive Committeeman, has already perfected a grand program, having secured the promise of papers from some of the best men in the dental profession.

Carl Lucas, Master of Exhibitors, has already almost the entire eighth floor of the Claypool Hotel reserved by the dental exhibitors.

The meeting will go down in the history of the association as a future "land mark," because of the large number of new members—Our Slogan, "1,000 members in 1912."



No dentist or exhibitor, who wants to attend one of the very best meetings that will be held in 1912, can afford to miss the Indiana State dental meeting this year. You will be welcome.

OTTO U. KING, Secretary.

Huntington, Ind.

Minnesota State Dental Association.

The twenty-ninth annual meeting of our Minnesota State Dental Association, which will be held in St. Paul, Minn., June 14, 15, 1912, promises to be the largest in the history of the organization. The large clinic and manufacturers' exhibit will occupy the entire top floor of the new Lowry Building, the largest and best equipped dental and medical building in the West.

At this time of the year the Twin Cities, with their wealth of parks and beautiful lakes, afford an ideal spot for vacation, and the business and instruction combined with the recreation so necessary to our profession.

For information, address

BENJAMIN SANDY, Secretary.

636 Syndicate Bldg., Minneapolis, Minn.

Lake Erie Dental Association.

The forty-ninth annual meeting of Lake Erie Dental Association will be held at Hotel Bartlett, Cambridge Springs, Pa., on May 23, 24, 25, 1912.

C. L. MEAD, Secretary.

Union City, Pa.

Kentucky State Dental Association.

The meeting of the Kentucky State Dental Association will be held in Louisville, May 27, 28, 29, 1912. As a special attraction, talented men from out of the State will be upon the program this year, and every indication points to the best meeting that has been held for many years. The dentists of Kentucky are especially invited, and a cordial invitation is extended to all ethical members of the profession.

W. M. RANDALL, Secretary.

Louisville, Ky.